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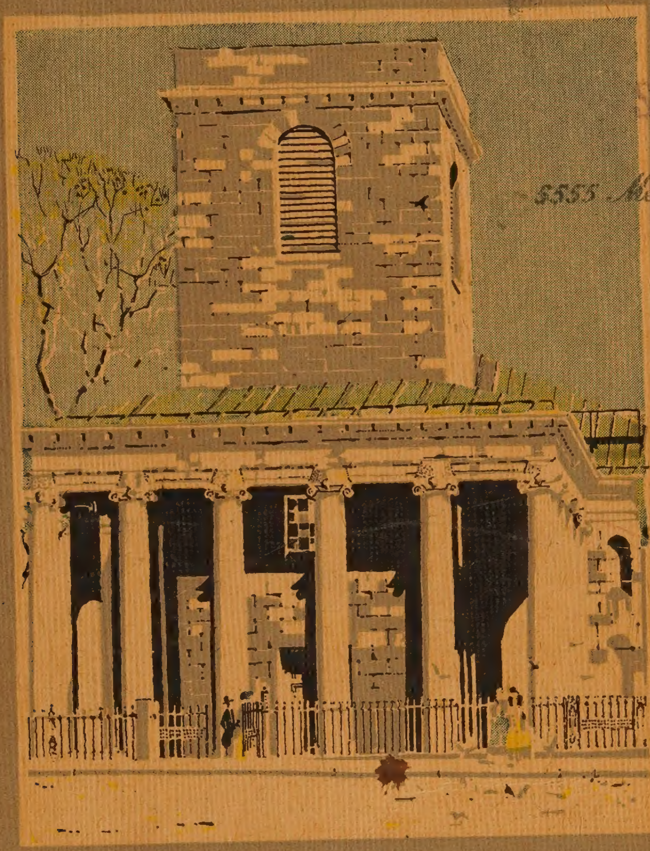

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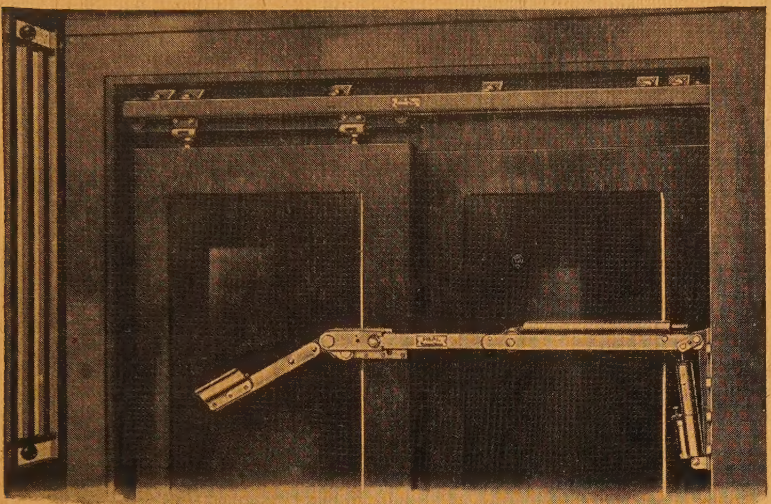

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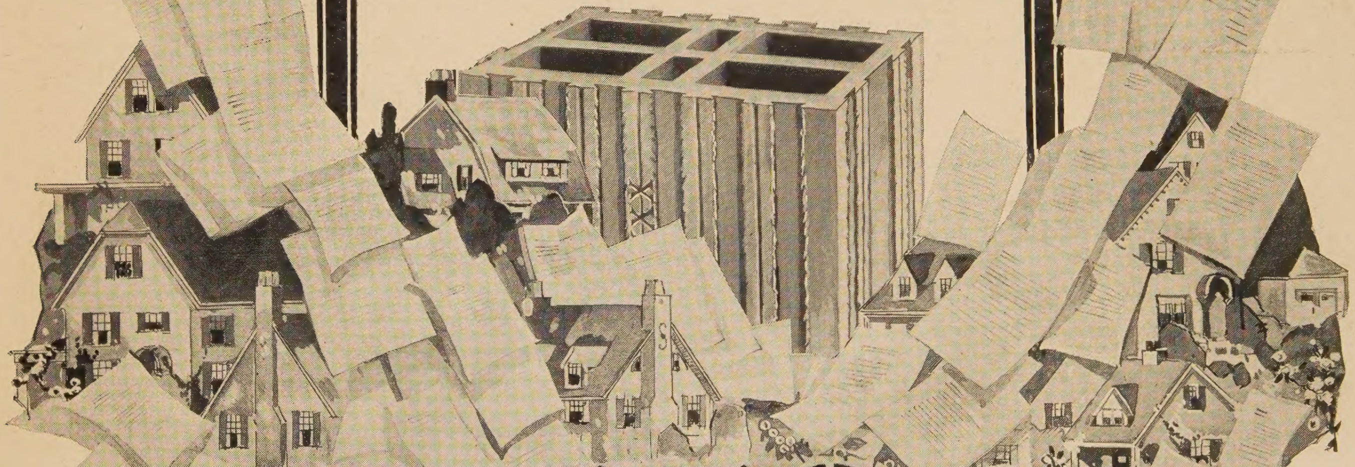

NATCO

HOLLOW TILE

Volume XL THE ARCHITECTURAL FORUM Number 4
Published Monthly by Rogers and Manson Company, 383 Madison Avenue, New York, N. Y. Yearly Subscription: U. S. A., Insular Possessions and Cuba, $6. Canada, $6.75. Foreign Countries in the Postal Union, $7.50. Single copies, 60 cents. Entered as Second Class Matter at the Post Office, New York, N. Y., under the Act of March 3, 1879.

Views show grill room of Detroit Athletic Club and exterior view of this well-known building. Truscon Metal Lath in ceilings. Albert Kahn, Architect.

Ceilings That Combine Beauty and Utility

How often you see an otherwise perfect example of architectural art marred by cracked ceilings and walls. The beauty of the room shown above is centered in the ceiling. Aside from its unique design, it is interesting because the coves have stood the test of years without unsightly plaster cracks.

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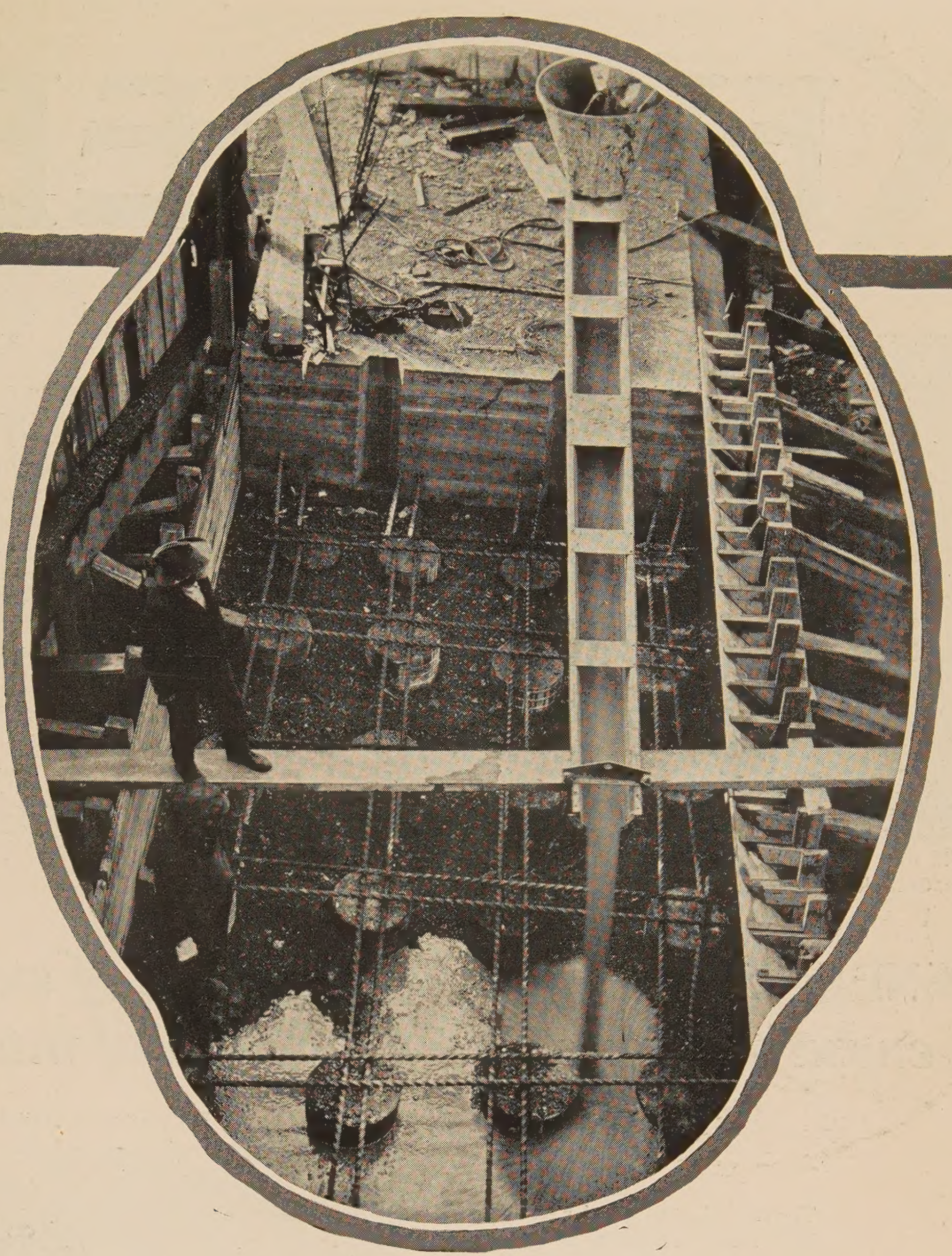

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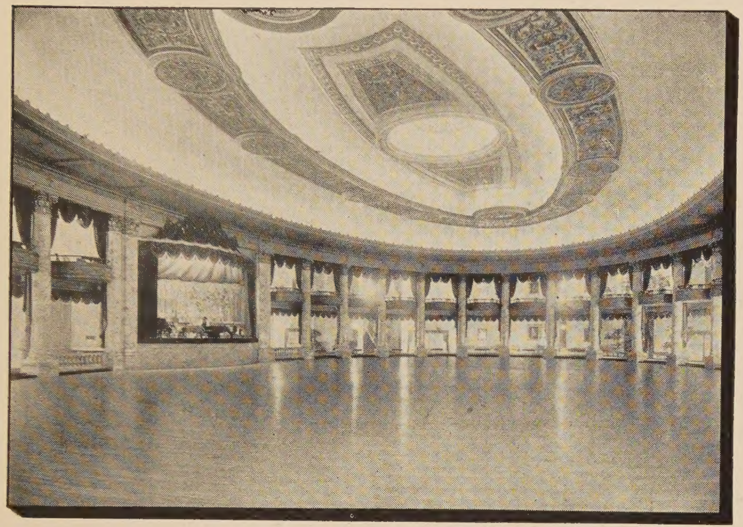

C. W. and G. L. Rapp, Architects
O. W. Daubert, Consulting Engineer

157 tons of coal for 153 days.

Conservative record of operating engineer, S. M. Forsythe, 1923-1924 steam heat season, including cold snap, proves super-efficiency of No. 322 Kewanee Smokeless Boilers of 20,000 ft. rated capacity. One boiler of pair, has carried whole load since opening of Trianon Building in 1921 using Franklin County run of mine coal supplied by F. D. Carpenter Co.

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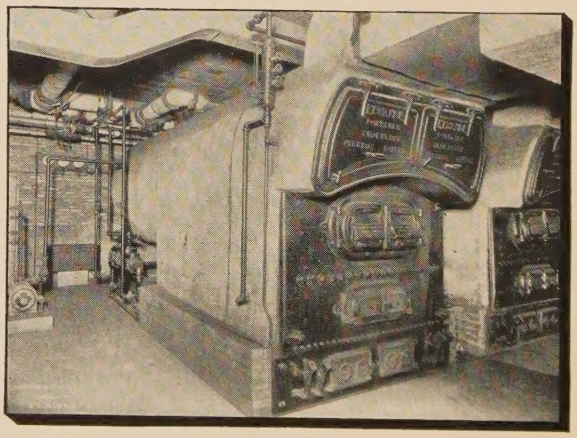

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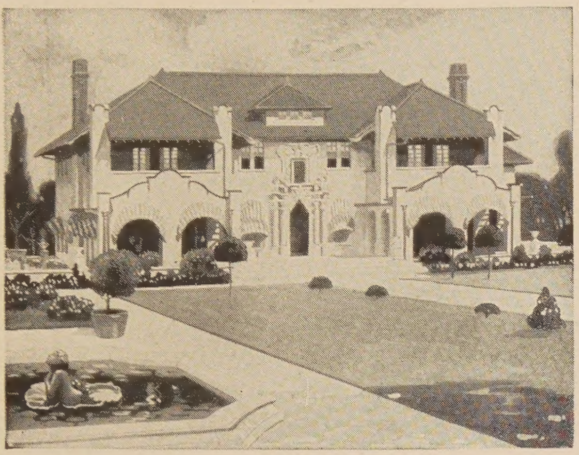

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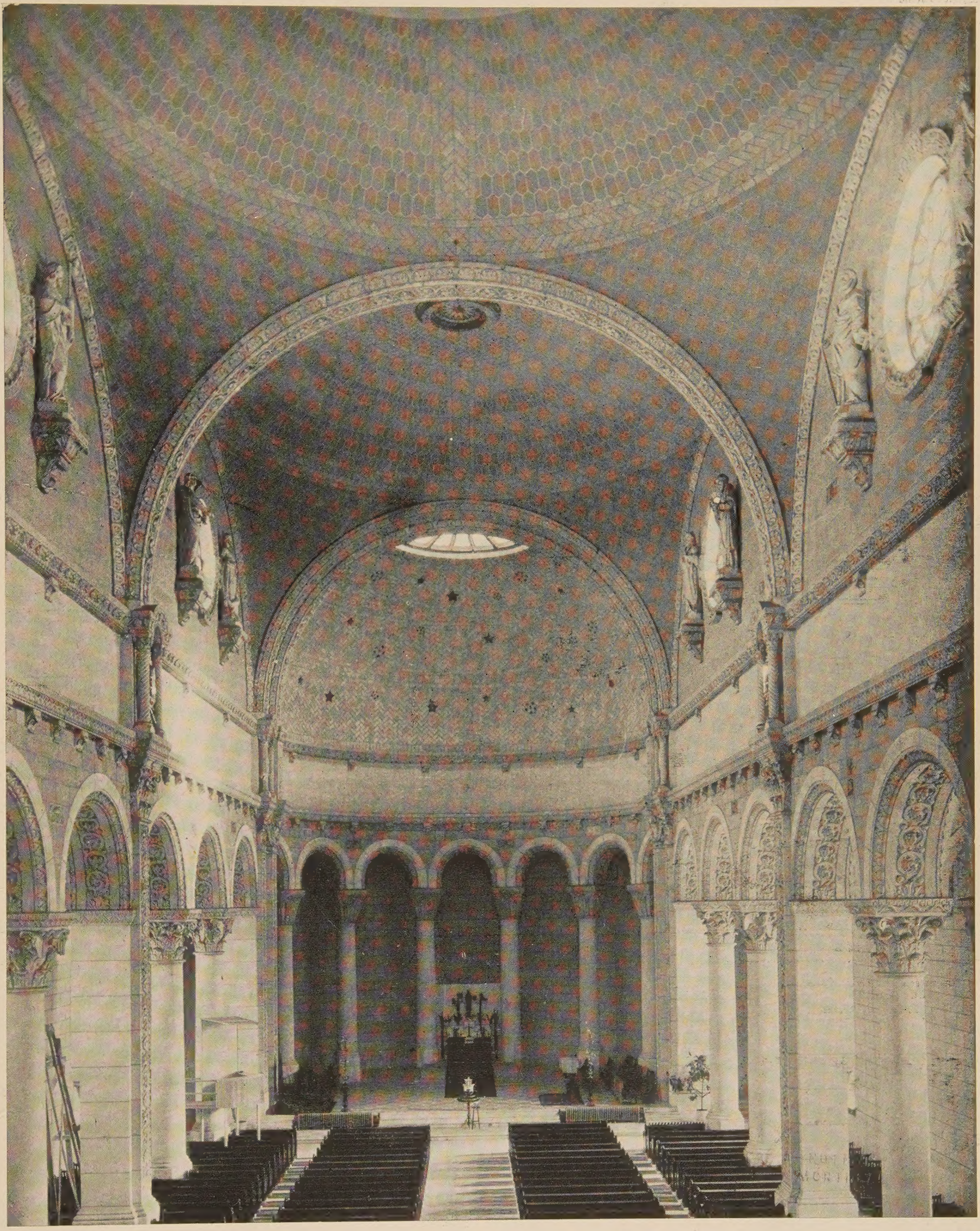

EGLISE DE LA NATIVITE D'HOCHELAGA, MONTREAL, P. Q.

Viau & Venne, *Architects* *Monseigneur,* G. M. LePailleur, *Patre-Curé*

Domed (3) ceiling construction forming the roof of the Church. Soffit course in varied shapes and colors of AKOUSTOLITH sound absorbing tiles. Wall facing with AKOUSTOLITH wall blocks, 15″ x 30″.

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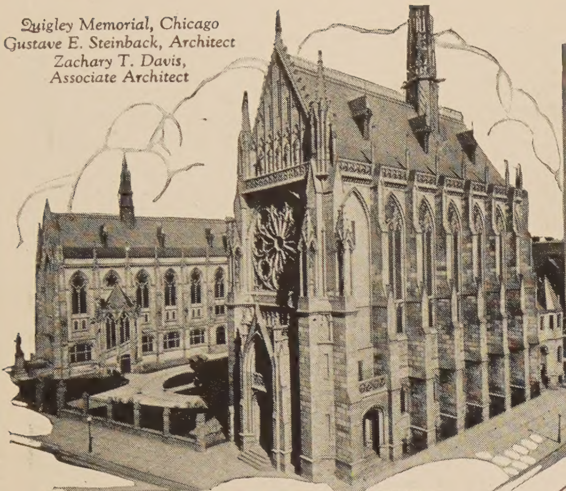
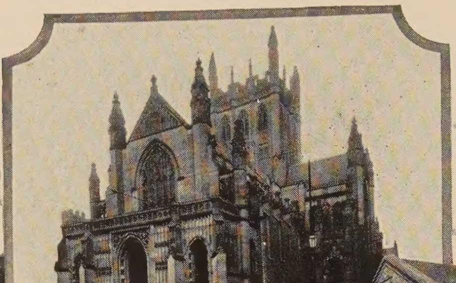
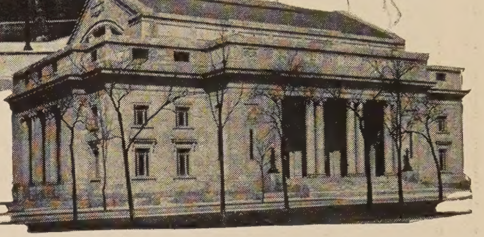


Quigley Memorial, Chicago
Gustave E. Steinback, Architect
Zachary T. Davis,
Associate Architect



Trinity Cathedral,
Cleveland, Ohio
Charles F. Schweinfurth,
Architect



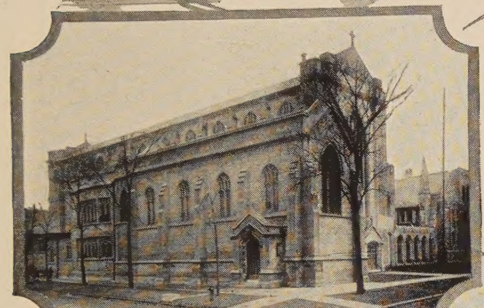
Chicago Sinai Congregation
Temple, Chicago, Ill.
Alfred S. Alschuler,
Architect

Beauty Everlasting

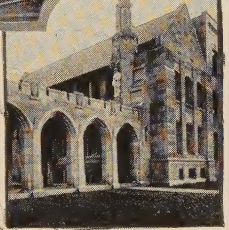
> *"Mankind was never so happily inspired as when it made a cathedral."*
>
> —R. L. Stevenson

THE outstanding examples of church architecture today, no less than the temples of Greece and the graceful cathedrals of France and old England, are expressions of architectural skill and genius brought to their highest degree of perfection.

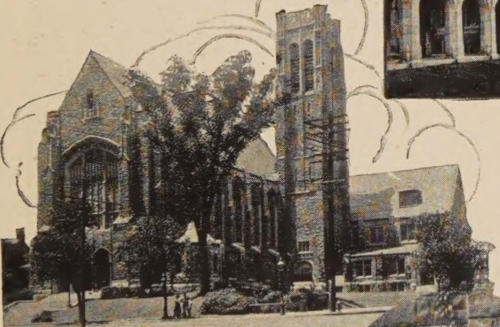
The master-builders of all times, striving to give permanence and endurance to the monuments of a people's faith and aspiration have ever built of stone. For in natural stone, there is a ruggedness and stability, a freedom from artificiality that makes it the most fitting of all building materials for churches and cathedrals.



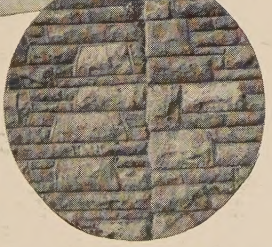
St. Luke's Church,
Evanston, Ill.
Tallmadge & Watson,
Architects



The Battle
Cloister,
St. Luke's
Church,
Evanston, Ill.



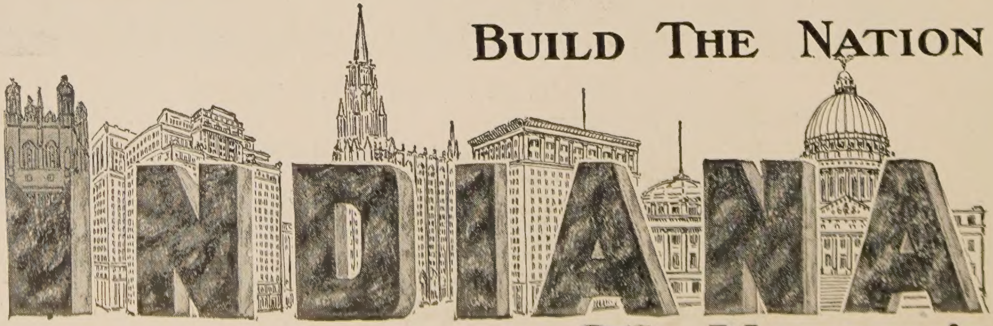
Westminster Presbyterian Church,
St. Louis, Mo.
Albert B. Groves, Architect



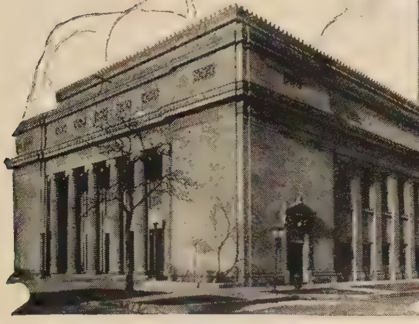
Detail of Random Ashlar wall facing,
Westminster Presbyterian Church,
St. Louis, Mo.

Rood Screen and Reredos,
St. Mark's Church, Frankford, Pa.
Frank R. Watson, Architect

BUILD THE NATION



The **NATION'S**



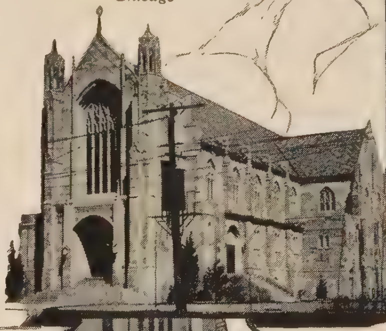
Eleventh Church of Christ Scientist,
Chicago
Leon E. Stanhope,
Architect

Corpus Christi Church,
Chicago
Joseph W. McCarthy,
Architect

Chicago Temple Building, Chicago
Holabird & Roche,
Architects

Fourth Presbyterian
Church, Chicago
Cram, Goodhue &
Ferguson, Architects
Howard Shaw,
Associate

Indiana Limestone Fountain,
Fourth Presbyterian Church,
Chicago



Tabernacle
Presbyterian Church,
Indianapolis, Ind.
J. W. C. Corbuser,
Robert Frost Daggett
Architects

Entrance, Tabernacle
Presbyterian Church,
Indianapolis, Ind.

Morgan Dix Memorial, Trinity Church,
New York
Thomas Nash, Architect

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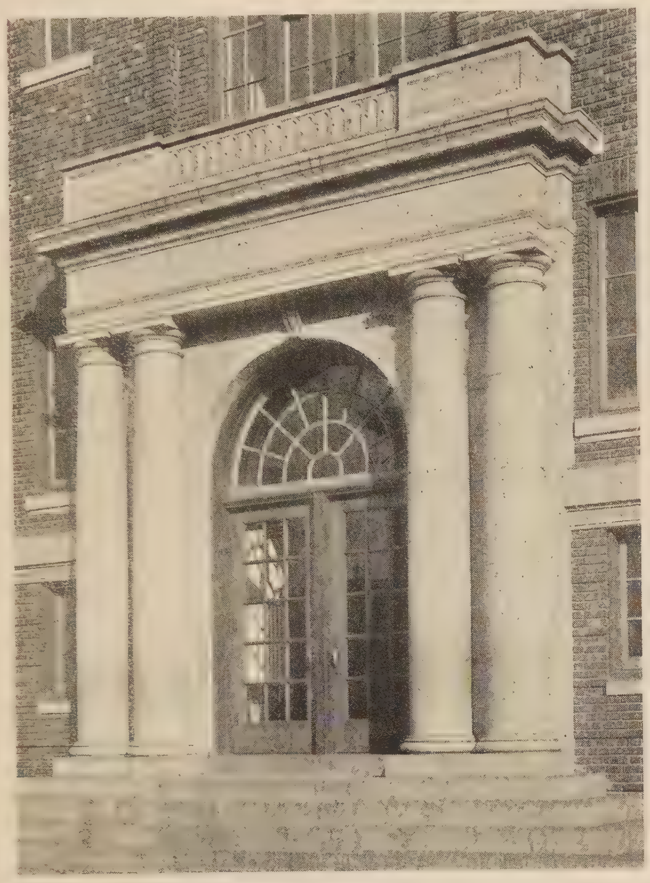

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Supt. of Buildings

Irwin T. Catherine
Architect

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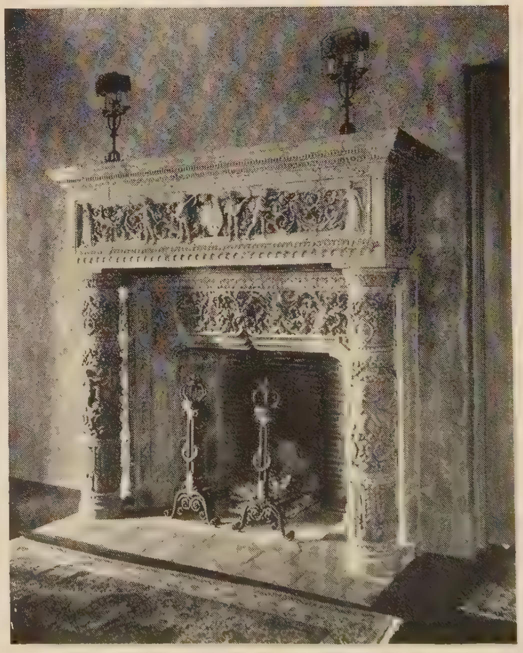
BATCHELDER TILES



A Mantel of Special Design
Elmer Grey, Architect

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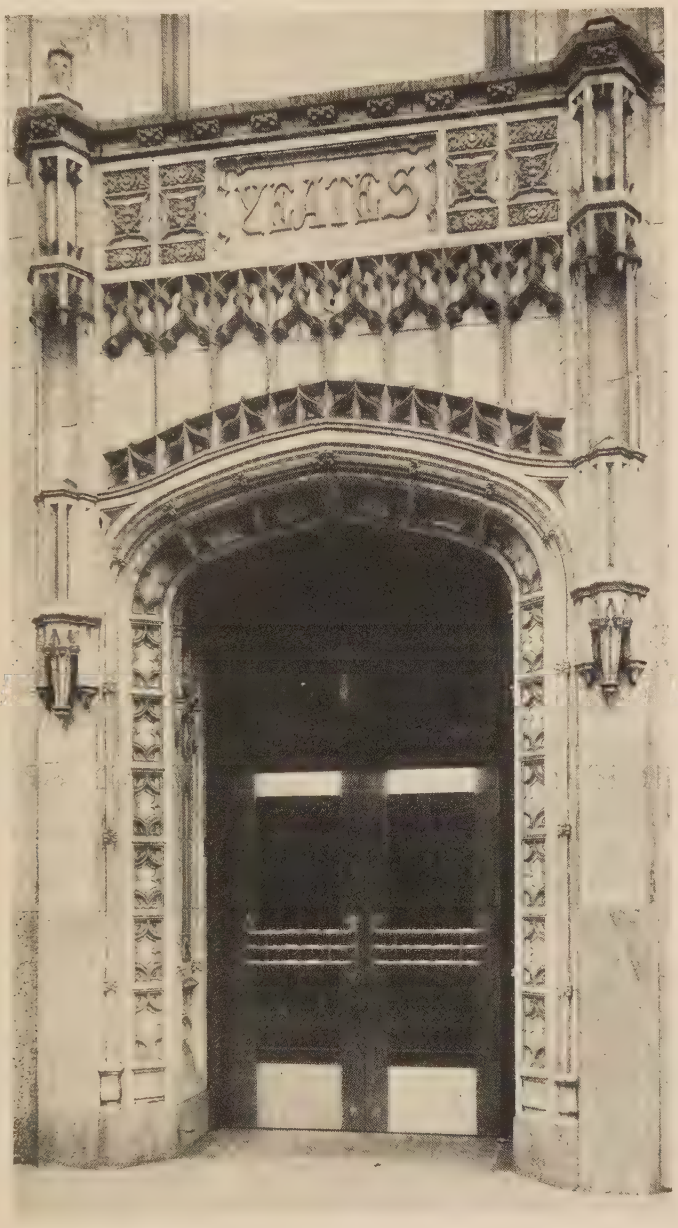
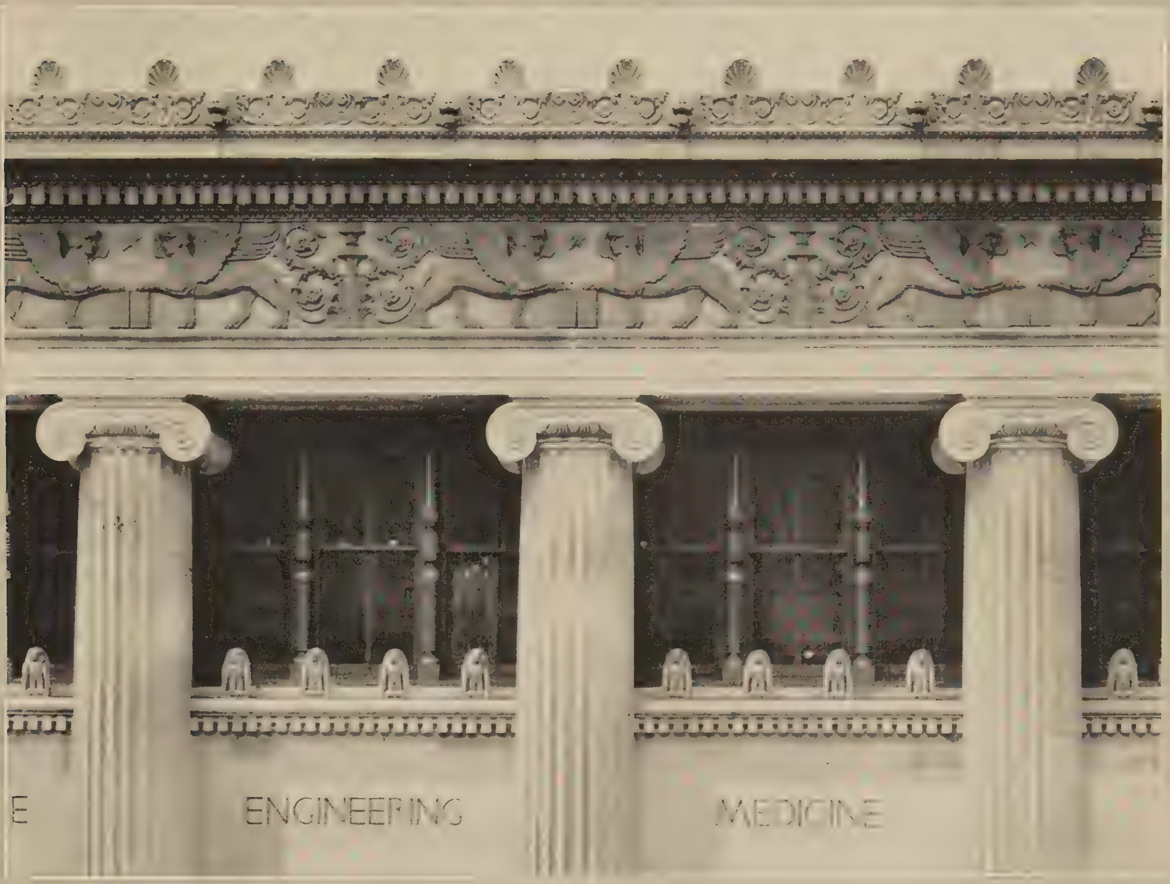


NORTHWESTERN is a short form of specification for architectural Terra Cotta of superior quality.

Detail of entrance, Yeates Building, Minneapolis, Minnesota; Long & Thorshov, Architects. "NORTHWESTERN" mottled glazed terra cotta of a buff-green tint was used for the entire facades of this six-story building. Note the polychrome treatment in jamb panels and name plate.

THE NORTHWESTERN TERRA COTTA COMPANY

CHICAGO



Detail of Entablature, Wilmington Public Library, Wilmington, Delaware. E. L. Tilton and A. M. Githens, Architects. Frieze and cornice in polychrome Terra Cotta. (Colors, deep yellow buff, gray and blue. Cornice repeats limestone coloring).

COLOR IN CLASSIC DESIGN

Polychrome treatment of decorative detail lent the final touch of perfection to the matchless conceptions of form in Hellenic architecture.

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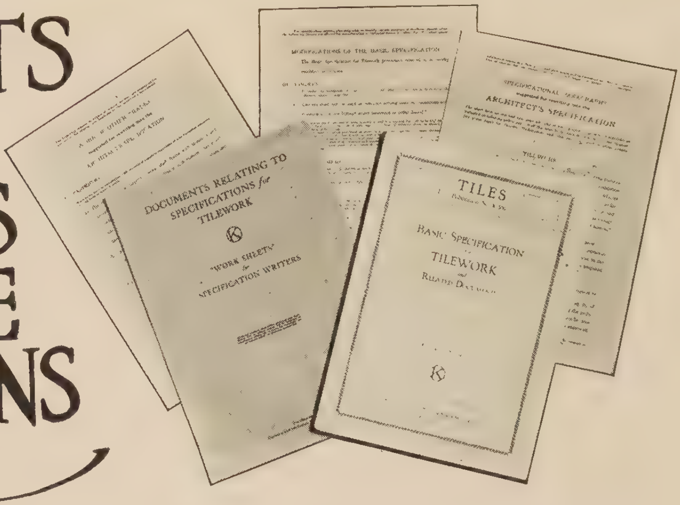
WORK SHEETS for ARCHITECT'S TILE SPECIFICATIONS


DOCUMENTS RELATING TO SPECIFICATIONS for TILEWORK
"WORK SHEETS" for SPECIFICATION WRITERS
TILES
BASIC SPECIFICATION TILEWORK
ARCHITECT'S SPECIFICATION

THESE WORK SHEETS—prepared by an architect for architects—boiled down from the 120 paragraphs of the Basic Specification into 8 paragraphs on yellow scratch paper—were designed to make specification writing easier • A blue pencil eliminates the portions not applicable to the particular building for which each specification is separately prepared • • • • •

Into 12 paragraphs on green scratch paper have been condensed all items in the Basic Specification which are subject to choice, as for instance if cinder concrete shall not be used • Here again a blue pencil makes the selection by elimination • • • • •

Not only as a reminder but also as a distinct help in securing proper preparatory work by other trades and assuring successful tile installations, the paragraphs on pink scratch paper require but similar • eliminations according to the type of construction involved • • • • • • •

The Basic Specification for Tilework is not a document intended to be copied • It is distinctly a reference document • It was prepared by our consulting architect in cooperation with other architects thru out the country and by others qualified to contribute and enhance its value • • • • •

ASSOCIATED TILE MANUFACTURERS
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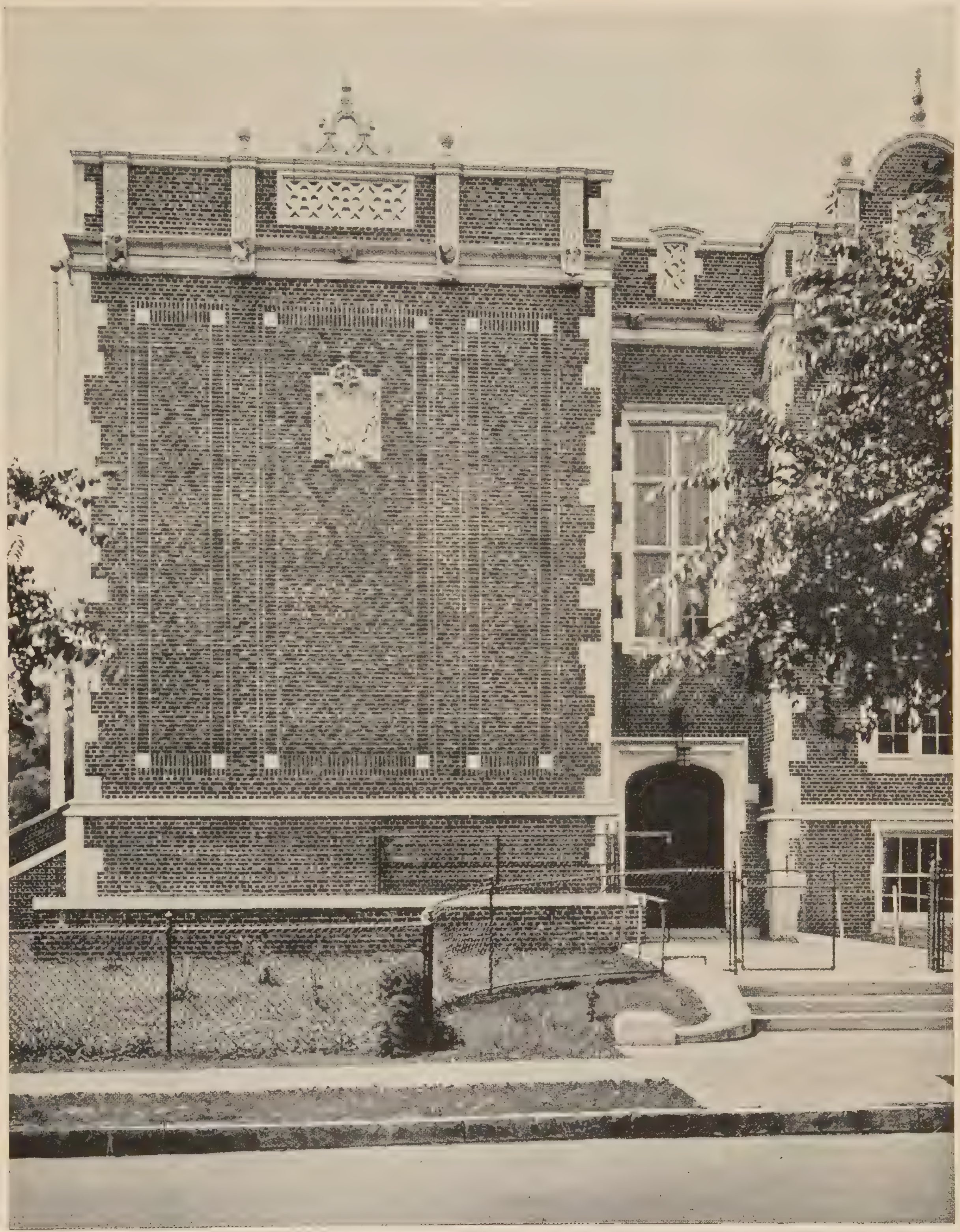

Wing of Normal School, Newark, N. J. E. F. Guilbert, Architect

THE stone and terra cotta trim bring out well the rich, dark field of brickwork, embellished as it is by delicate diamond traceries and pilaster effects. If you do not have "Architectural Details in Brickwork," ask for the portfolio. The halftone plates, issued in three series, each in a folder ready for filing, will be sent to any architect requesting them on his office stationery. The plates show many examples of the beautiful effects that can be economically obtained through the use of standard sized face brick.

Address, American Face Brick Association, 1751 Peoples Life Building, Chicago, Illinois.

MT. VERNON M. E. CHURCH SOUTH
WASHINGTON, D. C.
Sanguinett & Statts, Architects

GEORGIA MARBLE meets both structural and sculptural requirements. Its choice for monumental work by leading practitioners in the profession and its use by internationally known sculptors is a substantial recommendation of its durability and workability as well as its beauty.

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1328 Broadway

ATLANTA
804 Bona Allen Bldg.

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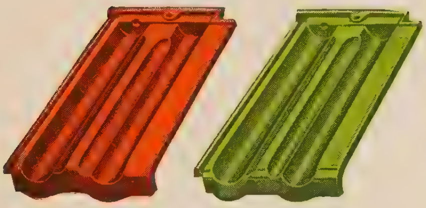
456 Monadnock Bldg.

When we build, let us think that we build forever. Let it not be for present delight nor for present use alone. Let it be such work as our descendants will thank us for, and let us think as we lay stone on stone, that a time is to come when those stones will be held sacred because our hands have touched them and that men will say as they look upon the labor and wrought substances of them, "See! This our fathers did for us."

John Ruskin

See Sweet's Catalog



TO achieve that inherent air of permanence and hospitality, so typically Dutch, is a feat; for there is a whimsical touch to Dutch Domestic Architecture that gives it an atmosphere of hominess which is unknown to other styles. The attainment of such effects is within the province of every architect. To supply the architect with well-made materials to help him achieve the desired effects is distinctly the job of the manufacturer. "Midco" Old Dutch Roofing Tiles will do much to help the architect achieve that atmosphere of hominess and stability in designs approximating Dutch Domestic Architecture, and they will furnish him a beautiful roof that defies time and the elements and which, in most cases, will outlast the building it covers. "Midco" Roofing Tiles are made in Dutch and a number of other styles and in a wide range of color. Each style and color will contribute much toward completing the effect of a specific architectural design. Write for samples and data.

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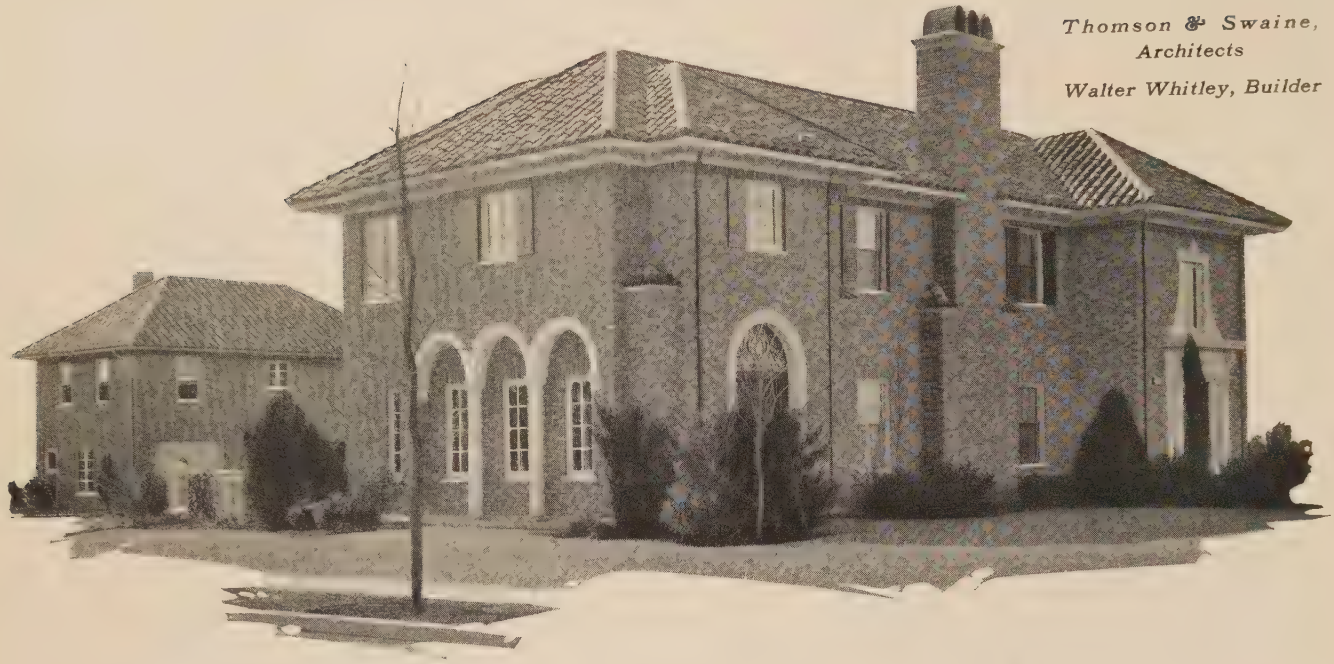
"MIDCO" PRODUCT—DURABLE AS THE EARTH FROM WHICH IT IS TAKEN.



Thomson & Swaine,
Architects
Walter Whitley, Builder

Capacity Over 75,000,000 Face Brick Annually

The Acme Brick Company, who have pioneered in the development of the high grade clay resources of the Southwest, own and operate the following plants:

BENNETTS (Millsap) TEXAS
This plant manufactures Smooth and Matte and Rugg texture face brick in Colonial Red, Tobacco Brown, and distinctive Olive and Gunmetal tones of weatherproof quality. They present strikingly pleasing wall-effects in either our soft or glazed finish. Sold in straight or mingled shadings to express the beauty of Nature's autumn leaf colorings.
Capacity over twenty million FACE BRICK annually.

DENTON, TEXAS
This plant manufactures face brick of Deep Russet, Nut Brown, Golden Bronze, and Purplish Gunmetal shades in Smooth and Matte and Rugg texture, weatherproof quality. Their rich and soft colorings give character to the wall and are especially pleasing in blends.
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This plant manufactures Smooth and Matte and Rugg texture face brick, weatherproof quality. Their soft colors range from Old Rose and Light and Dark Mahogany thru the varying Mulberry tones to a Royal Purple and rich Gunmetal. No glaring highlights, no pronounced shades, no extreme contrasts.
Capacity over twenty million FACE BRICK annually.

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This plant manufactures varying shades of Buff, Ivory, Clear Gray, and Grayish Buff Manganese face brick, weatherproof quality, in Matte and Rugg textures, from an unusual deposit of refractory clay that has no superior. Its purity assures clear tones of delicate tints that so well adapt themselves to classical and mission-type architecture, as well as buildings of monumental proportions.
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The method of finishing our Rugg texture face brick has been perfected through years of experience. It accomplishes a correct product. It is controlled by our patent.

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IN the diversity of tones and textures of ACME BRICK, the Architect has at his command a wealth of colorful and artistic combinations which lend themselves harmoniously to the peculiar characteristics of the building and accentuate the desired note of distinction.

Thus in the residence illustrated, the Architect's conception of a wall softened by time was realized through the ingenious use of Matte Texture ACME BRICK, ranging in tones from ivory-gray to flashed grayish-buffs in combination with browns.

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AN arch, a terrace, a walled garden, a doorway, an open fire-grate—each presents to the architect unlimited possibilities for the expression of individuality and taste.... Clinton Mortar Colors make it possible for the architect to add old world color harmony to the modern house, and make realizable through the proper blending of colored mortar with brick that subtle expression of enduring charm so definitely associated with the bygone ages.

Color card and folder giving complete information on the use of Mortar Colors sent free on request. Highest standards of quality and absolute uniformity are maintained by constant laboratory tests made by a trained chemist. We own and operate our own mines.

THE CLINTON METALLIC PAINT CO.
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Residence of Charles S. Harding, West Palm Beach, Florida. Marion Sims Wyeth, Architect.

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104 South Michigan Boulevard - Chicago, Ill.

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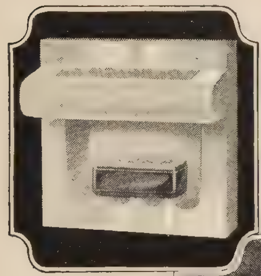
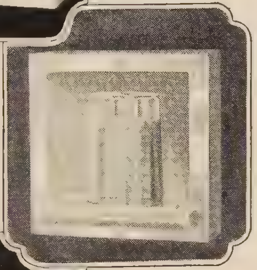
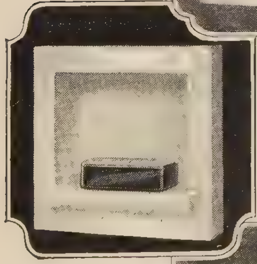


Soap Holder with Safety Wall Grip



Tumbler Holder



Soap Holder

Sponge Holder

FAIRFACTS FIXTURES are made of snow-white china. They should be put in the walls at the time the house is built or remodeled.

A tiled bath with china fixtures is not only beautiful but as durable as the house itself. The perfect harmony that exists between the toilet, tub and the glistening whiteness of FAIRFACTS CHINA FIXTURES lends itself to any color combination.

FAIRFACTS FIXTURES are made of china because it is the only material that will not become stained, checked or dingy. They may be cleaned simply by wiping with a damp cloth. There is a wide variety to meet with every need—soap holders, towel bars, shelves, safety wall grips, sponge holder, paper holders and toothbrush holders, tumbler holders, electric radiators and combinations of wide variety. FAIRFACTS FIXTURES are installed by tile contractors—the only trade that does this work—and should be included in the tile contract.

For the convenience of the contractors, all FAIRFACTS CHINA FIXTURES where possible bear standard bases and may be installed in tile sidewalls with a minimum of cutting. Send for catalog F. Details and specifications also appear in Sweet's Architectural Catalog.

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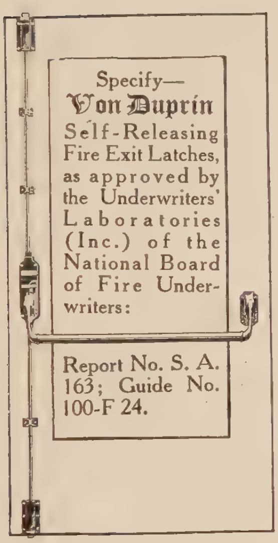
Look for th BATHROOM Fairfacts FIXTURES *trade-mark*

Fairfacts Fixtures

BUILT IN YOUR BATHROOM WALLS

Von Duprin

Self-Releasing Fire Exit Latches



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Self-Releasing Fire Exit Latches, as approved by the Underwriters' Laboratories (Inc.) of the National Board of Fire Underwriters:

Report No. S. A. 163; Guide No. 100-F 24.

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The owner of a large building *may* get along all right without **Von Duprin** latches, if fortune favors him, and he never has a fire or a panic in his building.

But—if he *does* have a fire or a panic in the building, the presence of **Von Duprins** on the exit doors will be a priceless asset, perhaps saving the lives of a number of the inmates.

There is only one way to be absolutely sure that the building housing large numbers of people is safe—and that way is to equip all exit doors with **Von Duprin** latches.

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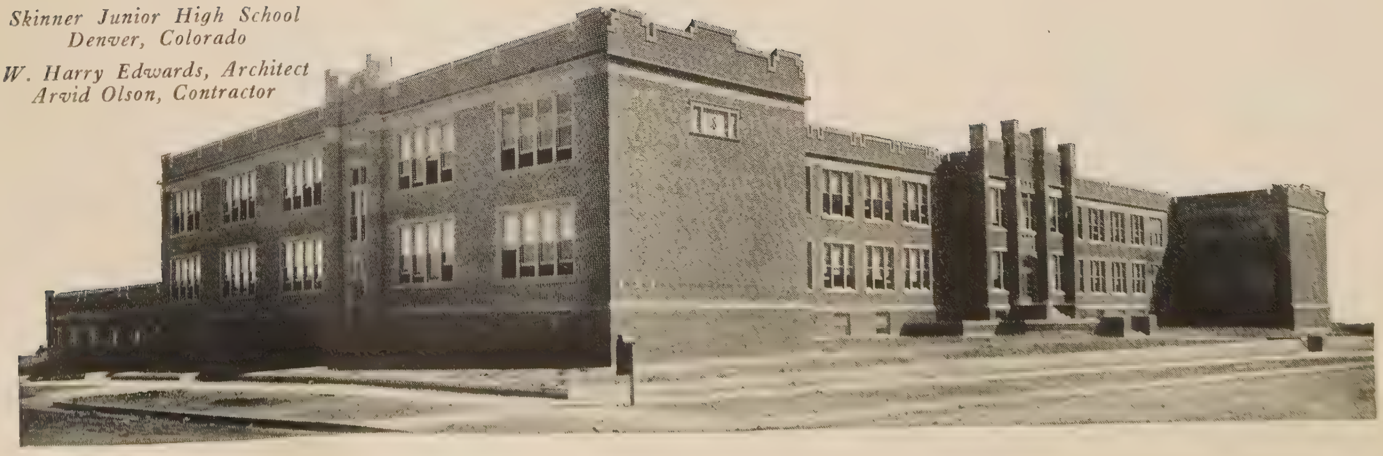

Skinner Junior High School
Denver, Colorado
W. Harry Edwards, Architect
Arvid Olson, Contractor

SARGENT
HARDWARE

Church of St. Vincent Ferrer
New York City

Architect
Bertram Grosvenor Goodhue

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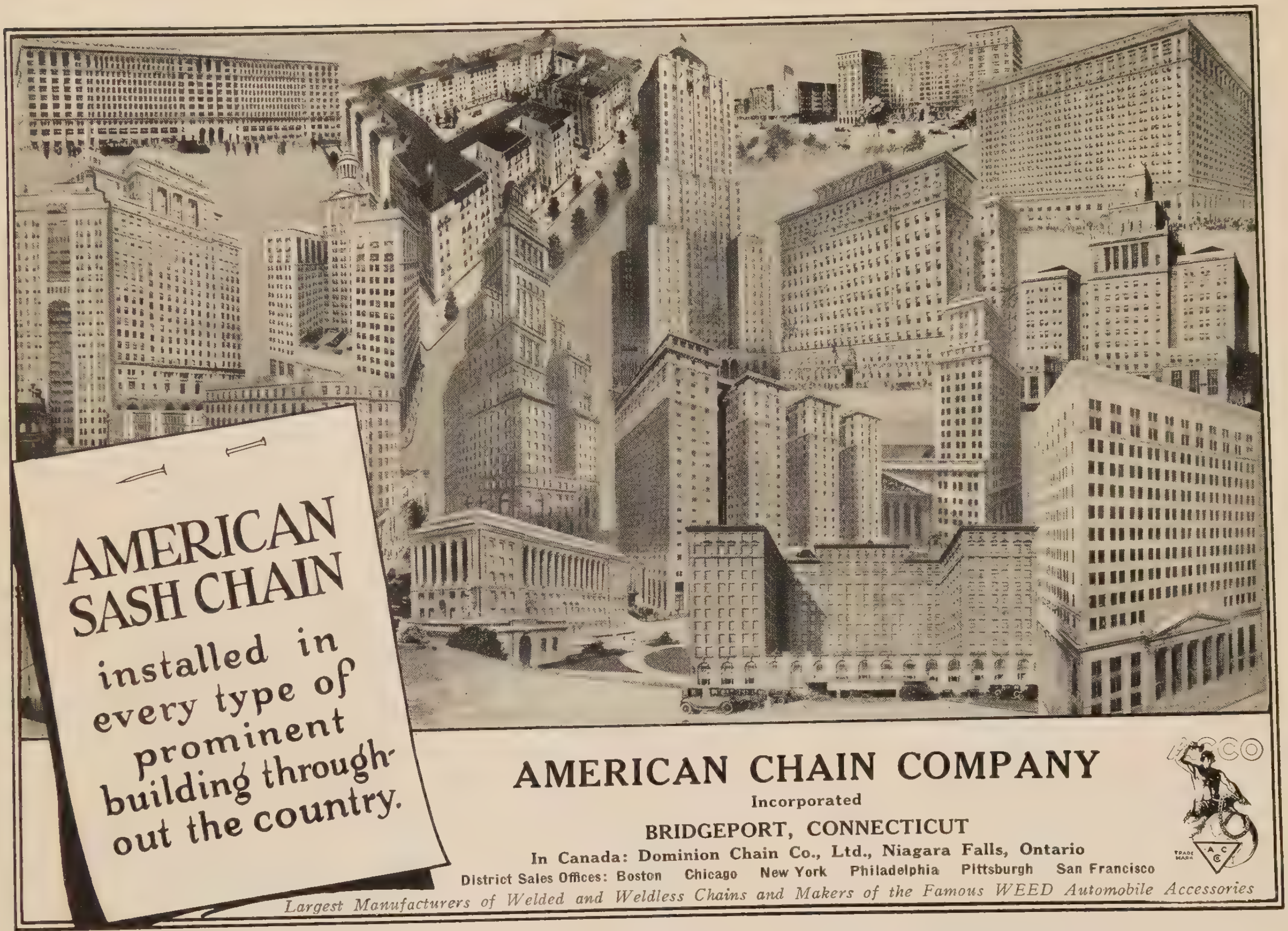
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SEE PAGE 1253, SWEET'S CATALOG.

THE SMITH & EGGE MFG. CO.
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—in the interest of Good Architecture and Good Hardware

GOOD service to those who plan and design *good* buildings is just as important as making *good* hardware. Whether yours is a "one-man office" or a highly departmentalized organization—these reminders of Corbin service are worth remembering—and the service, worth using. Route it to every man in the shop, starting with

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P. & F. CORBIN SINCE 1849 NEW BRITAIN CONNECTICUT
The American Hardware Corporation, Successor
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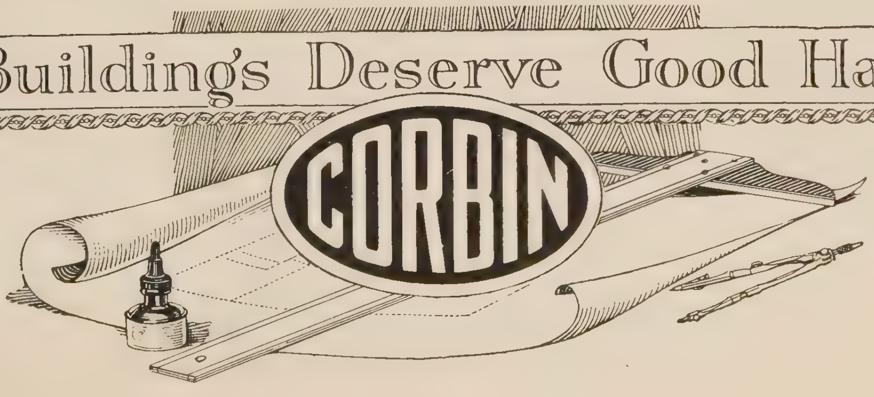

CARNEY

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Comes Five Sacks, 4.75 Cubic Feet, To Every Barrel

Carney Has These Exclusive Merits:

IT can be used directly after mixing or left in the box over night. There is no waste to Carney. It lays the maximum number of brick to the barrel. Each barrel contains five sacks (cloth or paper) or 4.75 cubic feet. Four parts sand carrying capacity—nineteen cubic feet of smooth mortar to a barrel of cement. Requires no lime, protecting against adulteration or errors through carelessness. Being more plastic and smoother working, the mason can work faster and easier. No soaking required. Ideal for wall-bearing buildings. It becomes harder than the brick and tile it joins and continues to harden indefinitely. It works perfectly in cold weather. Sets a creamy white, contrasting beautifully with brick or tile. Clients are always satisfied with Carney laid walls. Contractors bid lower because the labor cost of mixing and bricklaying is reduced and they do better work with Carney. Carney always builds a permanent, substantial structure. The final cost of a Carney wall is always lower.

Carney is the perfected cement for brick and tile mortar.

The Carney Company
Cement Makers Since 1883
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Mills: Mankato, Minn., Carney, Minn.

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Contractor W J Zitterell Co

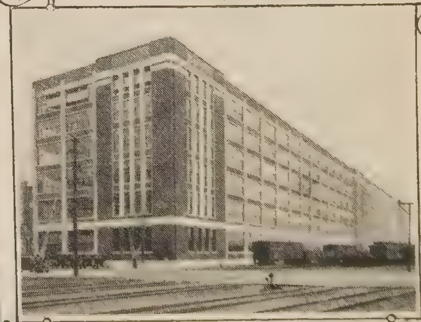
Park Boulevard Building, Detroit, Mich.
Architect, Albert Kahn
Contractor, Bryant & Detwiler

Catholic Orphanage, Alton, Ill
Architects, Wessbecker & Hillebrand
Contractor, Wimmer Contracting Co

Lincoln School, Mankato, Minn.
Architect, Geo. Pass, Jr.
Contractor, Eric Carlstrom

Wrigley Building, North Section, Chicago, Ill.
Architects, Graham, Anderson, Probst & White
Contractor, Lanquist & Illsley Co.

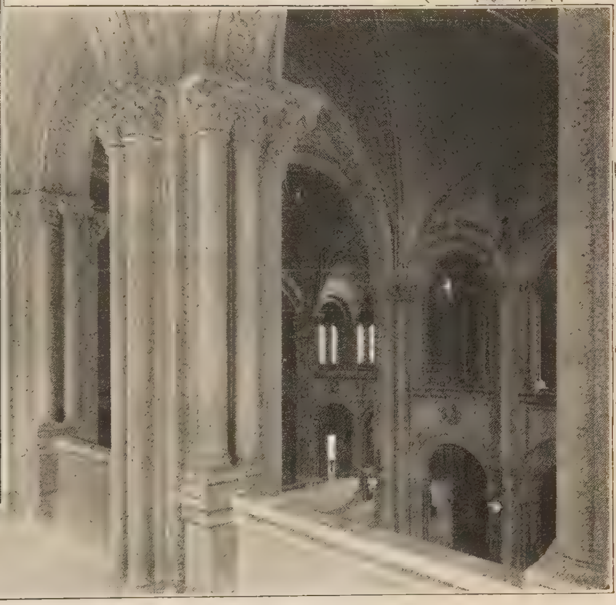
Buffalo Athletic Club, Buffalo, N. Y.
Architects, Edw. B. Green & Sons, Inc.
Contractor, John W Cowper Co.



Studebaker Corporation Bldgs, South Bend, Ind
Architect, Albert Kahn
Contractor, H. G. Christman Co.

Kno-Burn Metal Lath

"The Steel Heart of Plaster" Stops Fire–Prevents Cracks



St. John's Chapel at Riverton
Springfield, Illinois
Helme & Helme, Arch., Springfield
J. M. Hessing, Metal Lathing Contractor
St. Louis, Mo.

They'll Go To Riverton Just To See Beautiful St. John's

EVEN in its unfinished state, the Chapel, whose spires seem to spread a loving benediction over the quiet community, is compelling in its beauty, and it is safe to predict that many will pilgrimage to the pleasant Illinoisan town just to spend a half hour in the hush of St. John's stately precincts.

Worthily indeed have master craftsmen executed the nobly conceived design of the architects, and as the eye lingers on the graciously planned expanses and subtle detail of the interior treatment, it is a satisfaction to record the part that KNO-BURN Metal Lath has played in the construction of so fine an edifice.

The facility with which this *crack-preventing* and fire-resisting plaster base can be formed to the most difficult contours, no less than its rigidity and plaster-saving qualities, commend it to the attention of all architects who have important work on their boards.

May we send *your* specification writer samples and our handbook?

NORTHWESTERN EXPANDED METAL CO.

1234 Old Colony Bldg., CHICAGO

Kno-Burn Metal Lath

Just another shining
example of the beauty
and utility of

Third Church of Christ, Scientist, at New York City

This unusually attractive example of church architecture, designed by Delano and Aldrich and plastered by the Klee-Thomson Company, both of New York, is located at the corner of 63rd St. and Park Ave.

Note, in the interior views, how faithfully the architectural scheme is carried out in every detail.

Banner Finish was used in all the plastering because it is the one finish that spreads quickly and smoothly on any flat, curved or angular surface--and stays put.

Most architects know that the better plaster contractors prefer Banner Finish--that's one of the reasons why it's specified.

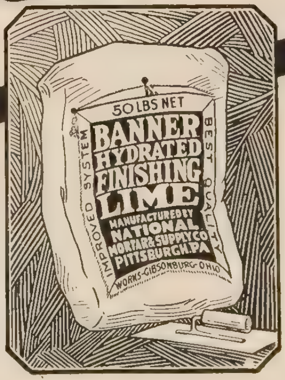
Furthermore, they know it is the product of the world's largest single plant devoted exclusively to the manufacture of one brand--the brand that comes from the famous Gibsonburg, Ohio deposits.

There are no come-backs if you make sure that Banner Finish is used when you specify it.

National Mortar and Supply Company
Federal Reserve Building
Pittsburgh, Pa.

Banner

"Easy to spread--
hard to beat"



Building at Michigan and Chicago Avenues, Chicago — Entire Facing of Cast Stone
Robert T. Newberry, Chicago, Ill., Architect. Ridenour & Erickson, Chicago, Contractor

Cast Stone for Beauty as Well as Permanence

BECAUSE it permits of varied textures and colors, because of its low absorption, because of the plasticity of the original material, and in the final analysis, for the reason that it is more economical, Cast Stone is becoming more and more widely used.

The entire facing of the structure pictured above is of Cast Stone—made of Atlas White Portland Cement.

Atlas White Portland Cement is the ideal material for Cast Stone, for it is a true Portland Cement. It meets all the requirements of the standard specifications adopted by the American Society for Testing Materials, and approved by the United States Government.

It is of a pure whiteness that permits of an endless variety of colorings and textures.

It is durable and wholly weather-proof—permanent, beautiful and economical!

"The Standard by which all other makes are measured"

THE ATLAS PORTLAND CEMENT COMPANY
25 BROADWAY, NEW YORK, N. Y.

CHICAGO BIRMINGHAM INDEPENDENCE, KANS.

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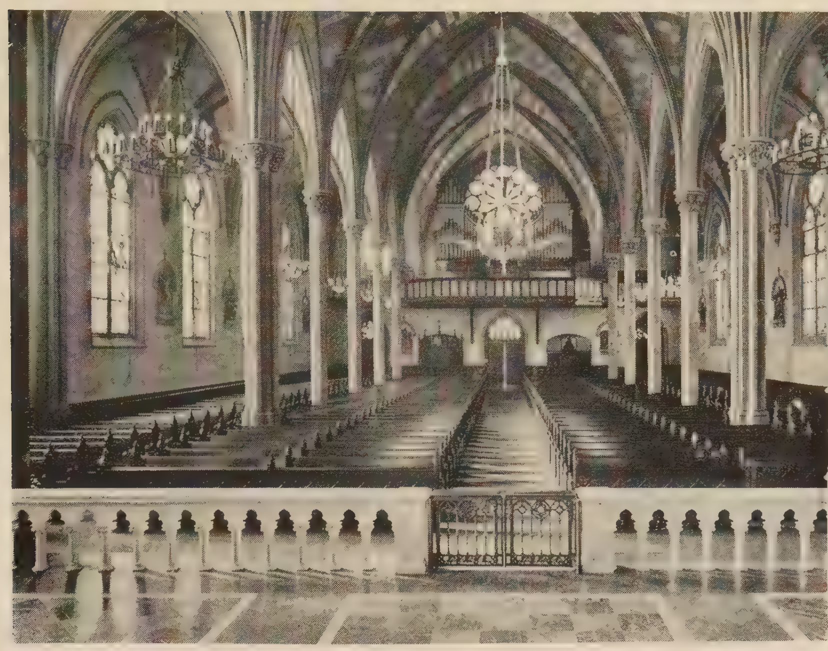
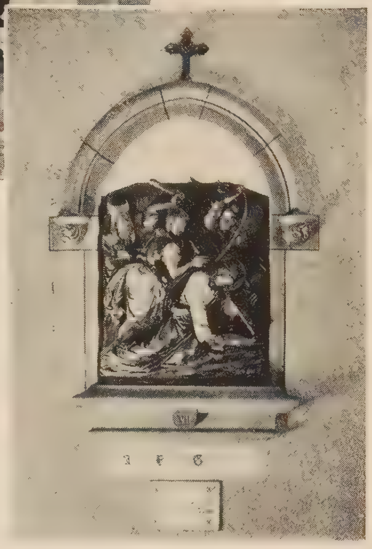


St. Thomas Aquinas Church, Brooklyn. F. Burrall Hoffman, Jr., and Murray Hoffman, Architects.

Morene applied over old painted defective plaster walls and ceilings.



View of wall and station showing fine texture obtained by the use of Morene.

MORENE

THE WALL FINISH DISTINCTIVE

A PORTLAND CEMENT PRODUCT

MORENE is a wall finish which possesses beauty of appearance as well as valuable acoustic properties. Its qualities which absorb rather than reflect sound, are such that its use renders more serviceable any building planned for music or public speaking.

Morene is an emulsion based on White Portland Cement, Sand and Asbestos so combined that the ingredients remain in suspension. Applied with a brush or trowel, it readily lends itself to the production of unlimited varieties of color combinations and textures, including stipples, sand finishes, tapestry effects, Caen stone, travertine and unpolished marble.

It is particularly valuable for church interiors. It can be used upon new brown or smooth plaster, any wall board or old painted surfaces. For full description see Sweet's Catalog, page 1471.

SAMPLES DISPLAYED WITH
ARCHITECTS SAMPLES CORPORATION
NEW YORK, NY

MORENE PRODUCTS CO., Inc.
243 West 28th Street . . New York, N. Y.

For Better Masonry
BRIXMENT

An entrance to the Latham Apartments, Columbus, Ohio, in which are combined architectural charm and living comfort. Brick work in Flemish bond. BRIXMENT for mortar. Miller & Reeves, Architects; E. H. Latham Co., Builders, Columbus, Ohio.

Columbus has long since discovered the merits of BRIXMENT

AND in this respect Columbus is typical of many of our more important cities in which BRIXMENT has been used for mortar in structures of exacting requirements—architecturally and structurally.

Adding to the growing list of representative "BRIXMENT jobs", the builders of the Latham Apartments, Columbus' new, distinctive community of apartment homes, have chosen BRIXMENT for its unquestioned integrity of construction, its economy and its ready adaptability to the desired tone and texture of the bond.

A descriptive self-filing handbook on BRIXMENT will be gladly sent you on request.

LOUISVILLE CEMENT CO., *Incorporated,* LOUISVILLE, KY.

An ANNOUNCEMENT

The Vitrolite Company, Chicago,
announces to the Architectural Profession
the formation of

VITROLITE PRODUCTS COMPANY

of NEW YORK

J. W. Wiley
PRESIDENT

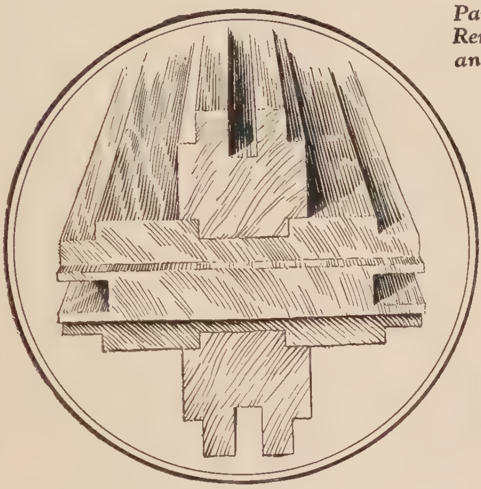
Pershing Square Building
Park Avenue and 42nd Street, New York City

THIS company has been formed to serve the architects, contractors, builders of the New York territory and to exhibit and exploit Vitrolite as a structural material.

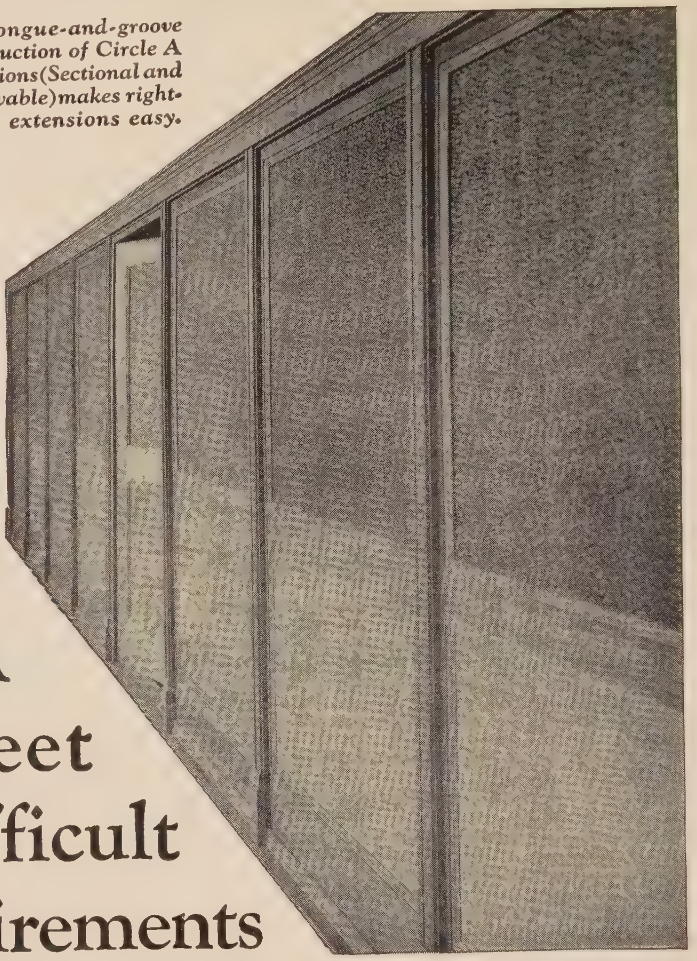
Also the following changes in the Executive Offices, Chicago:

WALTER N. THURN
Assistant Treasurer, Secretary

EDWARD W. SMITH
Sales Manager



The tongue-and-groove construction of Circle A Partitions (Sectional and Removable) makes right-angle extensions easy.



How Circle A Partitions Meet Two Most Difficult Building Requirements

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The Antique Use of Terra Cotta

RESEARCH into the architecture of antiquity and study of the materials of which buildings were constructed and of the methods by which the materials were used provide matter of interest to the modern world. Along with study of the buildings of ancient Greece and of the various parts of the Mediterranean littoral which were influenced by Greek civilization and refinement there has come a new idea of the richness which these antique buildings possessed. We are likely to think of the structures of Greek antiquity as being austerely and severely colorless—possessed of surpassing merit in the way of structural design, but of materials which were pale and generally cold. Nothing could be farther from the truth—and enough of the fragments of antique buildings have come down to us to afford some idea of the strong, vivid character of structures in which terra cotta in color was used in waterspouts, cornices, antefixes, and other details, but all this handled with Greek restraint, and with an eye to the harmony and symmetry of the building as a whole, which would be injured by the undue prominence of any detail to mar architectural balance.

Lateral Simæ, Metapontum, Temple of Apollo
Illustration from "Archaic Fictile Revetments in Sicily and Magna Gracia"

In this volume Mrs. Van Buren studies the use of terra cotta in Sicily and the various colonies and islands which comprised Magna Græcia during the period which closes with the ending of the fifth century B. C. Webster defines "revetment" as "a facing of stone, concrete, fascines, or any other material to sustain an embankment; also a retaining wall," but the term is used here in a much wider sense, and is made to describe a facing for any part of a building and even for a roof, and not only is a covering for exterior walls but for facing interior walls as well. The Greeks, for all their devotion to purity of line and consistent balance of decoration, possessed respect for the practical. Greece and the islands which dot the Ægean sea abound in quarries which supply marble of qualities excellent for building, but Sicily and certain parts of the Italian mainland much influenced by Greece furnish no marble, and the limestone which the soil affords being coarse did not lend itself to the sculptural treatment which Greek taste prescribed. Thus in these districts, as in Etruria where there is likewise no marble, there grew up a wide use of terra cotta, easily worked and capable of taking any desired form of color decoration. The ravages of time during the many centuries which have elapsed between that day and this have meant the destruction of much of what the antique bequeathed to the modern world, and the quarrying of ruins which has been going on for centuries has resulted in the scattering of these relics of the past. None the less, patient search brings to light, chiefly in museums in various parts of Europe, enough remains of ancient terra cotta to make possible the visual reconstruction of buildings such as existed in that distant period.

"Some faint idea of the glowing splendor of these archaic temples may be gained from a study of the abundant material found in the *temenos*, Syracuse, and still more from the really stupendous slabs which clothed the rather friable stone of the edifices at Selinus. One cannot but marvel at the fertile imagination of the artists who produced such a variety of forms, designs and coloring in spite of rigid rules which curbed their fantasies and a severely restricted range of colors which limited them to the use of red merging into a reddish purple and black fading into rusty brown on a cream ground, for it was only in the fifth century that the black and dead white scheme of decoration was introduced. Yet so skillfully did they combine or diversify the tones and motives, so cleverly did they gauge the play of light and shade, that all monotony is avoided and at first one hardly realizes with what scanty materials such a harmonious blending is effected." Theirs was a judicious use of resources.

Analysis of the illustrations which form so valuable a part of this work shows that the designs of all this architectural terra cotta are after all comparatively simple and are made up chiefly of familiar motifs—the tongues, guilloches, lotus blooms, mænders, sphinxes and lions' heads in countless arrangements and combinations, and in this may be found an instance of the real issue of all Greek art—the happy faculty of using only a few motifs or types employed in a perfect way, obtaining beautiful results by the simplest of means.

ARCHAIC FICTILE REVETMENTS IN SICILY AND MAGNA GRÆCIA. By E. Douglas Van Buren. 168 pp., 19 half-tone plates, 7½ x 10 ins. Bound in cloth, with cover ornamented in self color. Price $8. E. P. Dutton & Co., New York.

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Text and 76 plates, 10½ x 15½ inches.

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By Amelia Leavitt Hill

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160 pp., 5½ x 8¼ inches.

Price, $3

COLONIAL LIGHTING

By Arthur H. Hayward

The important subject of lighting Colonial houses is studied. The various forms of lighting fixtures used during early and later Colonial times are illustrated and described, with particular emphasis given the later period.

159 pp., 6 x 9 inches.

Price, $7.50

Character in any building is largely dependent upon the design of its interior architecture and the handling of its decorations. The growing importance of this part of an architect's practice warrants close study of interior design and decoration with which these works deal.

ROGERS & MANSON COMPANY
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New York

FILING DEPARTMENT OPERATION AND CONTROL. By Ethel E. Scholfield. 318 pp., 5½ x 8½ ins. Price $3. The Ronalds Press Company, New York.

THE importance of having an adequate filing system and the necessity of properly administering such a system are great in a business of any kind. Any executive or professional man knows the vexation and sometimes the embarrassment occasioned by the impossibility of finding quickly some important letter, contract or other document, and it has been well said that there exists no detail of office management which acts as a more infallible test of the administration's capability than the ease—or the lack of it—with which any document or piece of information once filed may be had. So great is the importance of a filing department that in many concerns what might seem to be a great price is paid to maintain it in the best of condition, for besides the cost of considerable floor area which is often necessary and the added cost of suitable filing equipment there is the cost of employing trained and capable file clerks and sometimes their assistants.

Study of filing systems and familiarity with their operation are indicated in this thoughtfully prepared work which points out the relations of the filing department to the executive, to department heads, to the library, the mail and messenger service, the research staff, etc. In the preparation of the volume the author has omitted much which is too obvious to require presentation, and has emphasized essentials which are not always seen to be essentials, important as they are.

HOUSE PAINTING, GLAZING, PAPER HANGING AND WHITEWASHING. By Alvah Horton Sabin. 160 pp., 5 x 7¼ ins. $1.50 net. John Wiley & Sons Co., Inc., New York.

IN the preface to this work, which now appears in its third edition, the publishers suggest that the volume is intended primarily for the "householder" or the amateur who desires to mix his own paints, and the entire book is written in language which is non-technical, in order to avoid confusing the reader.

All the branches of what is ordinarily considered the painting business are covered: Materials, Pigments, Care of Paint Brushes, Mixing Paints, Exterior Painting, Interior Painting, and Varnishing are dealt with, and later chapters treat of Floor Finishes, Glazing, Papering, Whitewashing and Kalsomining.

SMALL HOUSE DESIGNS. Collected by the Community Arts Association, Santa Barbara, California. 152 pp., 10½ x 10¾ ins. Price $5. Sales Agent: H. S. Elliott, 25 Pacific Avenue, Piedmont, California.

THE Community Arts Association has succeeded admirably in what has undoubtedly been an effort to stimulate interest in home building in general and to further the actual erection of homes in its locality. Some months ago the association announced a "small house competition," the designs submitted to be for buildings of not more than five rooms, placed upon an inside lot 50 feet wide and 150 feet deep. There were certain other conditions laid down, the chief being that the cost must not be over $5,000. The enthusiasm with which contestants entered the competition may now be judged from the volume of designs which has been issued.

As might be expected, many of the designs are for homes in what is populary known as the "Spanish-Californian type," the architecture of the early Spanish settlers, developed for the most part in plaster or stucco, and admirably suited to the climate and living conditions of the locality. Other houses are designed in the modern English cottage style and intended to be built of various materials, while other houses are intended to be built of frame and covered with clapboards. The plans of the houses are fully as interesting as their exteriors.

The association's aim doubtless is to secure the actual construction of buildings, and to make this as easy as possible considerable information is given on home building in general—"Hints to Home Makers,"—which includes some considerations on the ownership of property and advice on building which smooths away some of the difficulties presented by questions of financing.

It might be possible to build any one of the houses illustrated in the vicinity of Santa Barbara for $5,000, but we are not at all certain that it could be done for that amount in the vicinity of New York or Boston. Many of the designs, however, are so good that, wholly apart from the question of cost, the volume would be well worth the price to anyone interested in houses of this size and character.

CARPETS AND RUGS; How They Are Made; How to Select Them; How to Care for Them. By Otis Allen Kenyon. 168 pp., 5½ x 8¼ ins. The Hoover Company, North Canton, Ohio.

THERE is no detail connected with the building and furnishing of the interior of a house regarding which the average householder is so densely ignorant as he is upon the subject of the carpets or rugs, of one kind or another, which cover the floors. Many people of course know the difference between "Brussels" and "Axminster" carpets, and appreciate the wide difference between both these and "Ingrain," but much more than such elementary knowledge will generally be looked for in vain. Understanding of such matters as the difference between the density and the height of the pile, for example, or that between the carpet's warp and woof is usually entirely non-existent.

This volume has been prepared as a source from which one may gather such information as would promote a more intelligent selection and use of carpets. It begins, logically, with a brief historical sketch covering the origin and the development of rug and carpet making, particularly in Europe and the United States. It then takes up the various kinds or types of carpets, describes each and the mechanical processes by which it is made, and follows the processes through a carpet mill or factory from the time the fleece comes from the back of a sheep until it is ready for use as a finished carpet. Useful chapters are devoted to suggestions regarding the choice of oriental rugs,—how to detect "doctoring" or use of aniline dyes, or how to tell when a rug has been washed. Another part of the work is given up to suggestions for the selection of a rug of modern make—low priced, medium priced, or high priced—and important hints are given which the purchaser would do well to bear in mind.

A most valuable part of the book is that devoted to the "Care and Cleaning of Carpets and Rugs," important since the wear which carpets and rugs give is certain to be in proportion to the care which they have received. Considerable attention is devoted to the cleaning of rugs by various mechanical methods.

COTTAGES, FARMHOUSES AND OTHER MINOR BUILDINGS IN ENGLAND OF THE 16TH, 17TH AND 18TH CENTURIES. By Louis Conrad Rosenberg. 102 pp., 10½ x 13½ ins. Price $15. The Architectural Book Publishing Company, New York.

STUDY of domestic architecture brings to light no type which is more enduringly beautiful than the different styles which are grouped under the general heading of "English." No type of building for domestic uses is quite so popular in America today, and if one were to assemble a collection of illustrations showing American domestic buildings, large and small and from different parts of the country, it would be found that by far the greater number showed the use of types not Italian, nor French, nor Dutch, notwithstanding the beauty and excellence of all these, but of types which are definitely and characteristically English.

This strongly marked preference for English styles cannot be said to be the result of any historic or sentimental association of the types with American tradition; it is due wholly to the suitability of the styles to American life, conditions and customs. This quality of suitability includes much more than the dignity and grace which the types possess; it includes the high degree of domestic comfort which they afford, and also an unusual flexibility as to scale and plan, for the English home is scarcely more beautiful when worked out in the development of a large manor house of the Queen Anne type than when used for the interpretation of a cottage or a farmhouse such as might have been built in England at any time from the day of Shakespeare to the end of the Georgian era. One more reason for the strong appeal which English domestic types exert in America is that they may be easily and correctly developed in materials of a number of different kinds; stone, brick, stucco or wood in different forms or several of these materials in combination may be fittingly used to work out the different English types, and the plan of the house, without ceasing to be definitely English, may vary from that of the square, prim and somewhat box-like type of William and Mary to the irregular and rambling farmhouse which cannot be said to belong exclusively to any one of the periods.

Into this volume Mr. Rosenberg has gathered illustrations from photographs or sketches of quite a number of just the buildings which most interest American architects and builders today. No part of England is richer in material of this character than the southern and south-eastern portions, and the examples which are here presented are from the Cotswolds, Suffolk, Sussex, and Kent, the shire which includes Canterbury. These old villages and small towns have yielded many a photograph or sketch of cottage, farmhouse, minor manor house or a building of some other description which is full of help and inspiration to the American architect and his client. The work also includes a goodly number of working drawings of gables, chimneys, dormers, oriel or casement windows, or else of interior details such as fireplaces, doorways or staircases. Each of the illustrations of buildings is accompanied by a short description giving information as to certain details of the building which would be likely to aid the architect or builder in gathering something of its character. The book would certainly be worth to an architect every penny of its cost in the suggestions which it will afford.

COLONIAL INTERIORS
Photographs and Measured Drawings of the Colonial and Early Federal Periods
By LEIGH FRENCH, Jr., A. I. A.

INTERIOR woodwork during the Colonial and early Federal periods was exactly what is demanded for "Colonial" interiors today. The character of workmanship in the colonies insured craftsmanship of excellent quality, and this, together with design carefully studied from the simpler contemporary English work, resulted in woodwork which it would be difficult to improve upon. For this reason close study is being made of such old American interiors as still exist, and measured drawings make possible the reproduction today of much of the finest woodwork of the seventeenth or eighteenth century. These forms, while they involve not a little subtlety in the details of design, demand merely the use of simple mechanical processes which are not beyond the skill of any reasonably proficient woodworker, sometimes of an ordinary carpenter.

IN this valuable work on the early American periods there are given illustrations from new photographs of interiors of the time, many of which are little known. These illustrations are of rooms of different kinds and of widely different types,—the early, somewhat severe type as well as that which was later and more refined and luxurious. Valuable illustrations are supplemented in many instances by invaluable working drawings,—details of wall paneling, mantels, over-mantels and fireplace surrounds; door and window trim; china closets; newels, balusters and other details of stairways, and designs for the stenciling of floors, together with notes on the colors originally used. It is a volume which in its practical usefulness will be of great value to architects whose work involves much use of early American interior design.

125 plates, 10 x 15 inches. Price $15

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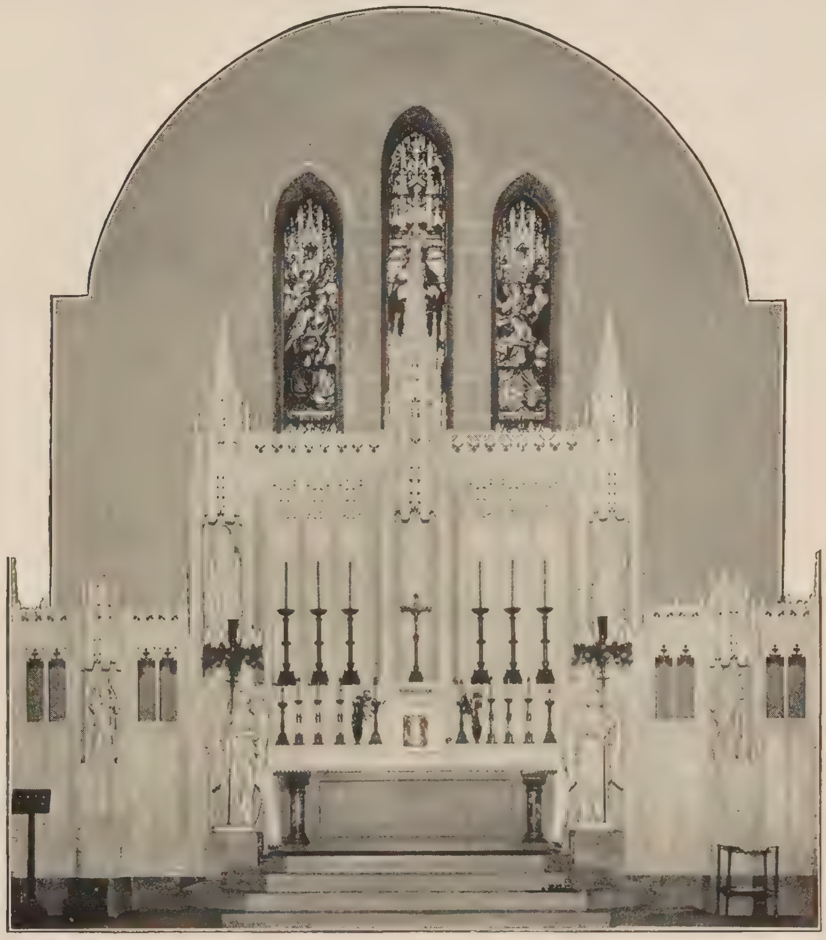

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VOLUME XL NUMBER 4

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ALBERT J. MacDONALD, Editor
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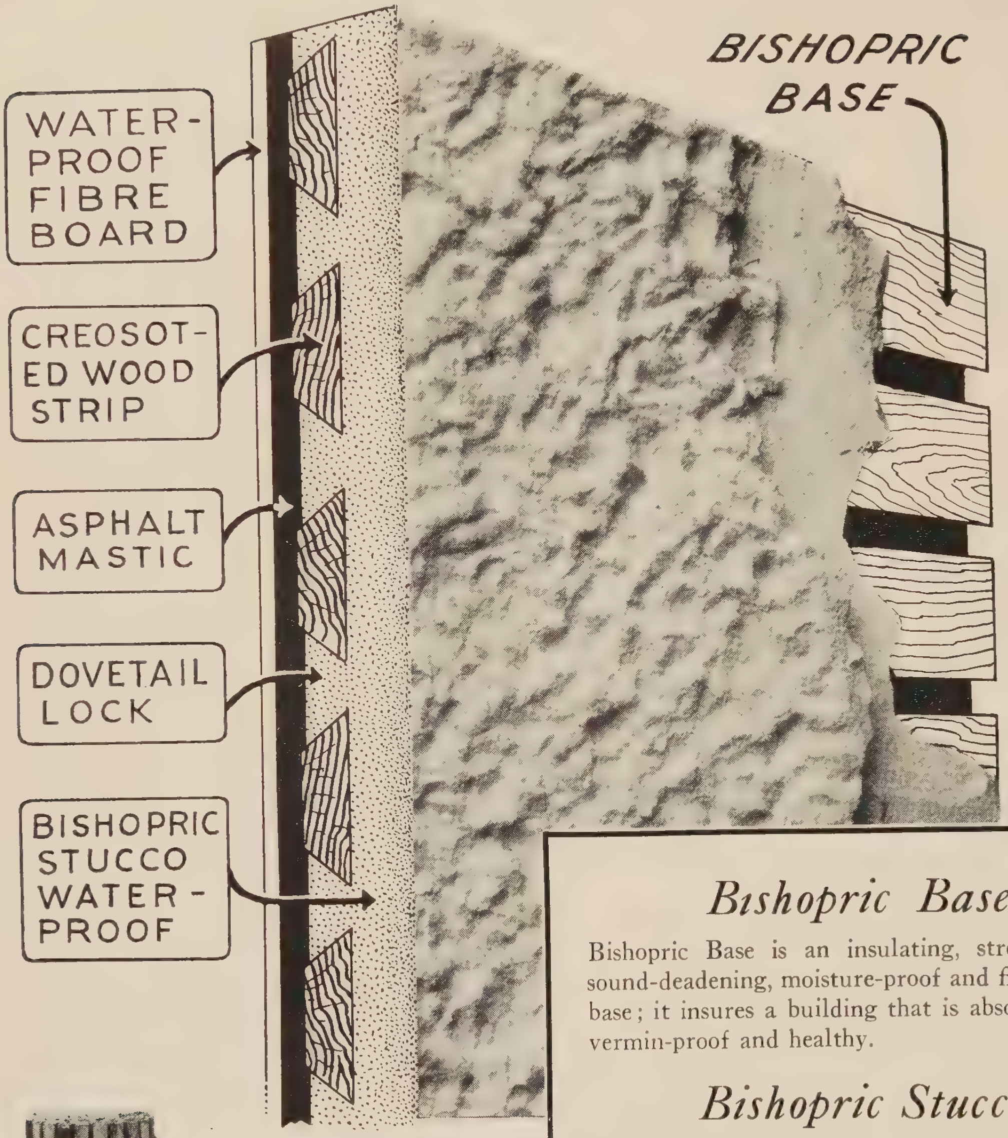

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THE EDITOR'S FORUM

GOLF TOURNAMENT

PREPARATIONS are being made for this year's session of the Annual Golf Tournament for Architects of the Southeast which will be begun on May 9, 1924, at the East Lake Country Club, Atlanta. This tournament is open to all architects and architectural draftsmen of the southeastern part of the United States, and no entrance fees are imposed. As in former years a number of prizes or trophies will be offered,—the "Southeastern Architects' Gold Championship Cup," the "Atlanta Architects' Championship Cup," and the "Southeastern Architectural Draftsmen's Cup." The details of arranging the tournament are in the hands of W. J. J. Chase, 140 Peachtree Street, Atlanta, to whom application should be made by those who expect to take part in the tournament.

RECENT NECROLOGY

PIERRE L. LE BRUN, born 1846, died February 14, 1924, will be remembered not only as the architect of the Metropolitan Tower but also as the founder of the Willard Collection of Architectural Casts at the Metropolitan Museum, the donor of the Pierre L. Le Brun Library at the same institution and of a similar gift to Montclair, and perhaps chiefly as the founder of the Le Brun Scholarship. His generosity and the wisdom which directed it entitle his name to grateful remembrance.

In the recent death of Clarence Luce there was lost an architect whose best known work was almost entirely in connection with expositions. He designed the Massachusetts Building at the Centennial, the Court of Honor at the Paris Exposition, and the New York Buildings at the St. Louis, Jamestown and Portland Expositions. In addition to designing structures such as these, he was the architect of many buildings of different kinds in New York and Washington and in various other cities.

Lewis Colt Albro, whose death occurred recently, was born of American parents in Paris in 1876. His youth was spent in Pittsfield, Massachusetts, and in 1893 he entered the office of McKim, Mead & White where during 13 years he was entrusted with much important work. From 1906 to 1913 as a partner in the firm of Albro & Lindeberg, his work, which was chiefly of a domestic nature, was marked by a high and unvarying standard of excellence, and during the following 11 years of his independent practice it was distinguished by originality, versatility and by that keen appreciation of color, mass and design which won for him the honor of being included among the American architects notably successful in the field of domestic and civic architecture.

1924 ARTS TOUR

ONCE more announcement is made of the European tour which is conducted each year under the auspices of the Institute of International Education. The 1924 tour will be directed by Prof. Albert C. Phelps of the College of Architecture at Cornell University, under whose direction last year's tour was so successfully made. Other members of the faculty will be Edith R. Abbot of the Metropolitan Museum of Art, as lecturer on the history and appreciation of painting; Professor Edward Lawson, Fellow in Landscape Architecture at the American Academy in Rome, as leader of the travel course on landscape and garden design, and John Clark Tidden of Rice Institute as instructor in painting and lecturer on the fine arts.

Each year demonstrates more clearly the great value of directed travel for the student of architecture and the other arts. Details of the 1924 tour may be had from Irwin Smith, Director of the Institute, 405 Times Building, New York.

SPRING EXHIBITIONS

THE first exhibition under the auspices of the Chicago Architectural Exhibition League will be opened May 1 at the Art Institute and will extend over the month. The Architectural Exhibition has heretofore been given by a committee appointed jointly by the Chicago Architectural Club, the Illinois Chapter of the American Institute of Architects, and the Illinois Society of Architects.

The Chicago Architectural Exhibition League, a corporation not for profit, has been newly incorporated for the purpose of taking over the functions of this committee with the idea that a permanent body could plan its program for a term of years, and with the accumulated experience and good will could produce exhibitions that would reflect greater credit on the profession. The exhibition will be illustrative of architecture and the allied arts, and may include drawings and models of proposed or executed work, academic drawings, examples of rendering sketches, sculpture and the allied arts and crafts, photographs and other features, specially arranged with the Exhibition Committee.

The joint exhibition given by the Boston Society of Architects and the Boston Architectural Club will be held at the Rogers Building, 491 Boylston Street, during the month of April and will be opened the afternoon of Monday, March 31.

From April 7 to 28 inclusive the St. Paul Chapter of the American Institute of Architects will hold an exhibition in the interests of architecture and the allied arts at the St. Paul Public Library. The chairman of the exhibition is T. G. Holyoke, 649 Endicott Building, St. Paul, to whom inquiries are addressed.

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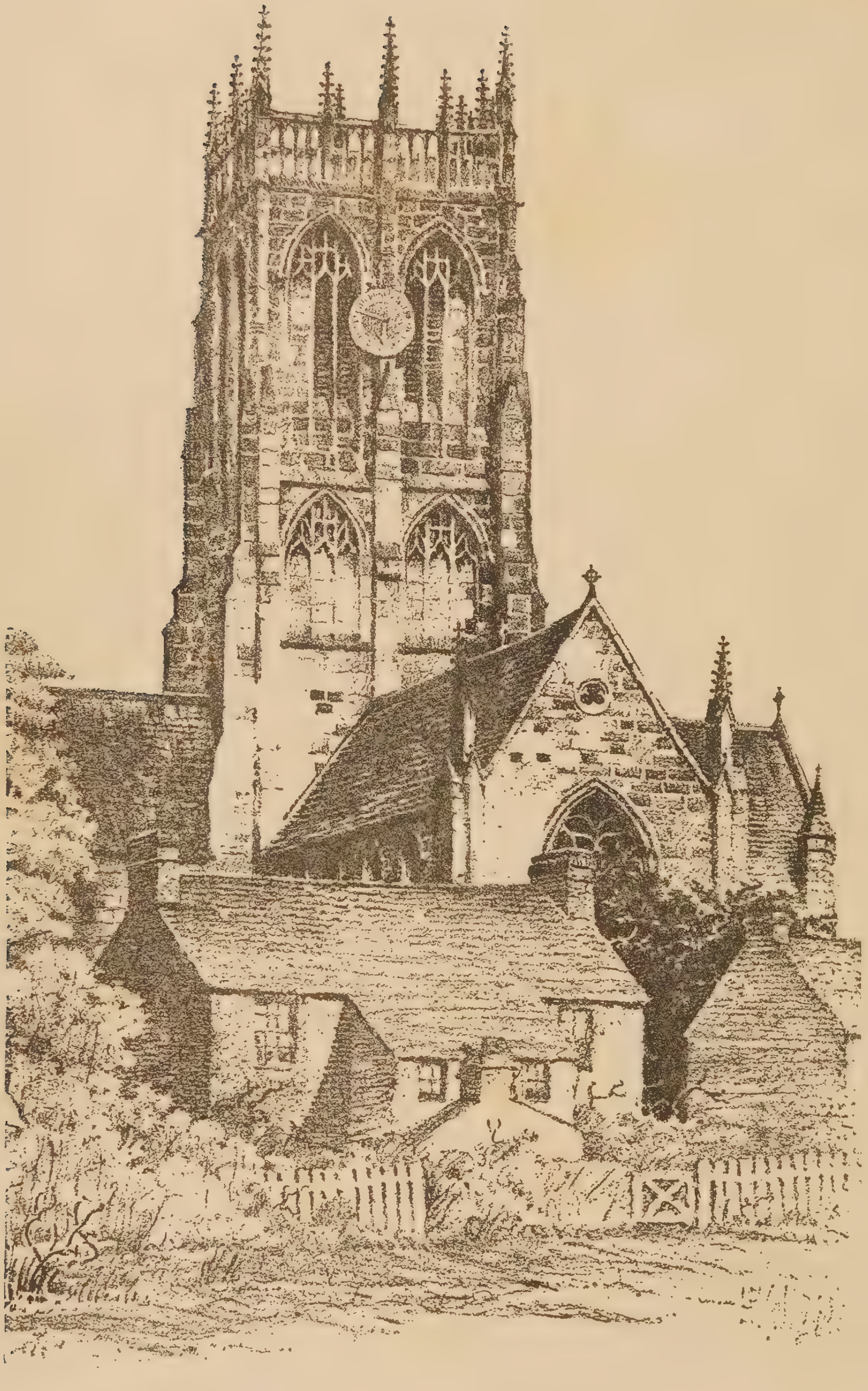

HEDON CHURCH, YORKSHIRE

FROM PENCIL SKETCH BY H. F. KELLOGG

The
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VOLUME XL APRIL 1924 NUMBER 4

Architecture of Liturgical Churches

By RALPH ADAMS CRAM

ALL the Christian architecture we have inherited from the past, from the time of the Emperor Constantine to that of the Medici, the Bourbons and the Stuarts, was the varied expression of Catholicism, whether of the Patriarchate of the West or those of the East. Plan, form, organism, all grew inevitably from the play of racial stocks and increasing, indelible tradition, on the liturgical system that had been developed by the Church to express the faith of which she was the custodian and to give it the most powerful and effective appeal to the peoples in her charge.

There is no authentic record of non-liturgical Christian public worship in apostolic or post-apostolic times. The moment the Edict of Toleration was promulgated (A.D. 313) the Church appeared before the world with a full liturgical system, rich, elaborate and significant, and this remained in universal use, though with local additions and sequent modifications, for thirteen hundred years. Since the sixteenth century it has been continued by all the Eastern Orthodox Churches, the Roman Catholic Church, and, in modified and curtailed forms, by the Anglican Church and the Lutherans. Non-liturgical public worship was unknown to Christendom until the time of John Calvin (d. 1564), from whom sprang the various Protestant denominations.

Contrary to common belief, the primitive worship of Christianity was not the simplest in form; instead, it was of extraordinary elaboration and magnificence. The nearest approach we have today to this earliest type of Christian worship is in the solemn, tremendous and highly elaborated services of the Greek and Russian Orthodox Churches, and the Visigothic or Mozarabic rite still celebrated in Spain, in chapels of the cathedrals of Toledo and Salamanca. The Roman Mass was an attempt (and a successful one) to devise a service that should be shorter, simpler and more popular than the primitive rites with their intricacy, their magnificence and their interminable length. The reformers of the sixteenth century did not return to the "simplicity" of earlier days, but rather to the Temple worship of the Jews, but without the solemn ritual and fine, austere symbolism and ceremonial which it possessed.

All the architecture, then, of Christianity, which casts such imperishable glory over fifteen hundred years of history, whether it be basilican, Byzantine, Lombard, Romanesque, Norman, Gothic or Renaissance, and the allied arts, as well, from painting and sculpture to stained glass and needlework, are the outgrowth, or rather the visible manifestation, of a religion which was essentially liturgical in its methods since it was inextricably bound up with beauty, and the ministry of beauty, in all its forms.

Now, for the first fifteen hundred years Christianity was essentially sacramental, and it so remains today so far as the Roman, Eastern and Anglican Churches are concerned. The seven great sacraments, together with the prophetic function of preaching, largely controlled the development of the organism of church buildings. Of these sacraments the Holy Eucharist or Mass was and is supreme in a very particular way, and its nature, the ceremonies that surround it, and its relation to the whole body of the faithful, practically determined the essential elements in a church plan. The Eucharist is both communion and sacrifice; in its first aspect it is for the constant spiritual strengthening of the people; in its second it is not only a perpetual memorial, but in a real sense an extension in time of the Sacrifice of Calvary and is potent for both the living and the dead, and as well a continuation of the sacrifices of the old law of the Hebrews under the new law of Christianity. Unique in its majesty and power, it demanded equal primacy in position and distinction. Therefore from the beginning a church was an altar, guarded and exalted but (in the West) clearly in sight before all the people, protected in every way, surrounded by all the beauty possible to man, and with accommodations for the priests and other members of the hierarchy, the choristers, acolytes and other orders of ministers. The remainder of the fabric was to shelter the worshipers, the congregations that came together for sermons, the processions and pageants, the subordinate chapels, shrines and altars, the tombs of the pious dead, and finally was for the exaltation by means of architecture and all the arts, through fabrics sometimes of vast

Choir and Sanctuary, St. Anne's Chapel, Arlington Heights, Mass.
Cram & Ferguson, Architects

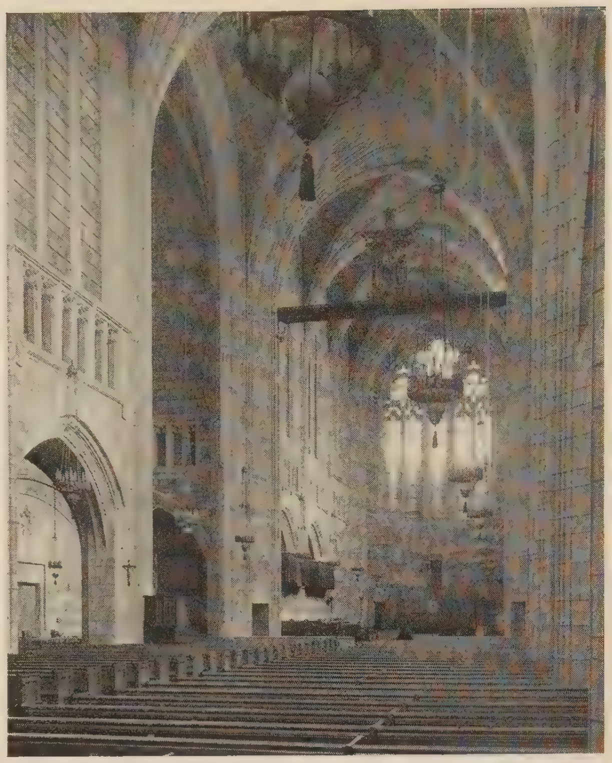
size and always of supreme beauty, of the glory of God and the devotion and worship of His people.

In the earliest days after the liberation, two plans struggled for the mastery—the centralized, with the dome as its controlling feature, and the basilican with its nave and aisles. So far as Europe was concerned, the latter scheme was victorious, and when in the eleventh century the fully developed, centralized church such as San Vitale, Ravenna or the Royal Chapel at Aix was cut in two, and one-half affixed to a basilican nave and transepts, so giving the germ of the *chevet,* the standard type of plan was fixed for five hundred years, the type which has indeed lasted until our own day, and has given us, as its organism was fully worked out and its character established by various races, all the great churches of mediæval Christendom.

Simultaneously, two liturgical tendencies were developing: that of the East, which held tenaciously to the elaborate, primitive ritual and held the Mass in such oriental awe that the altar itself was hidden from the people by a solid screen or iconostasis and no part of the Holy Sacrifice was revealed to them; that of the West (the Catholic Church), where simplification was going on, together with constant diversity and the development of local rites, devotions and uses, and above all a certain "democratizing" of worship whereby the altar was brought into the midst of the worshipers and every act of the priests and other ministers made fully visible. Here was a great humanizing process going on at the hands of the Catholic Church, and it resulted in such churches as those of France, Italy and Spain, where the sanctuary is open on all sides, though protected by screens, the choir was reduced to as small a size as possible, and the people crowded up around the altar from all sides. Spain carried this to the farthest limits by pushing the choir for canons and singers back into the nave in order that nothing might come between the people and the object of their devotion. The English cathedral type goes to the other extreme, with the high altar at the far end of an enormously long choir, and solid walls shutting it off from the aisles. This aloofness and forbidding character were not intentional but resulted from the fact that these cathedrals were formerly monastic churches, the enclosed choir being for the sole use of the monks, the people having the nave with their own altars. It is impossible to avoid the conviction that the continental plan is the right one and should be adopted in the case of modern cathedrals.

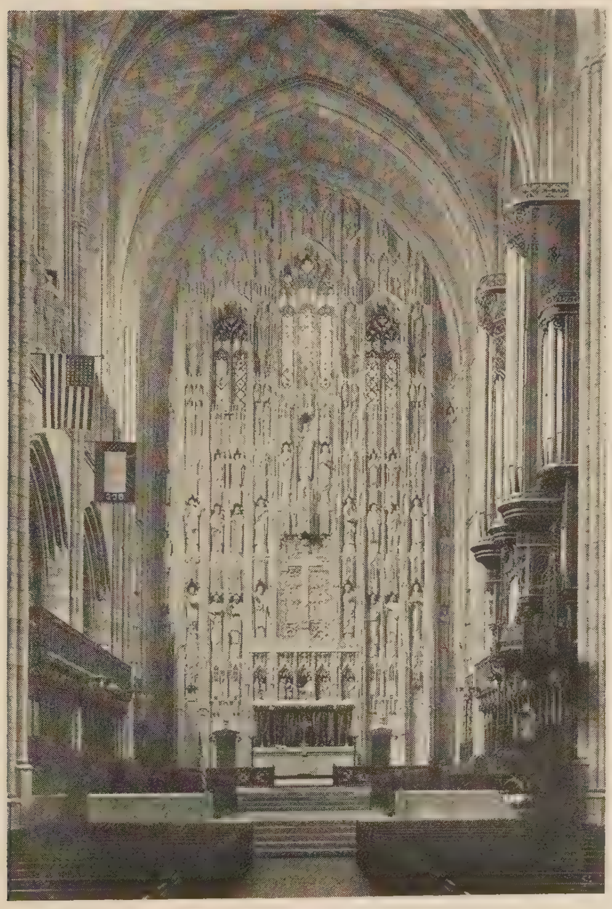
A Christian church was then, and without contradiction for fifteen hundred years, a place where (a) Mass was said and the people came together for the public worship that centered around this supreme fact of religion; (b) a commodious house where five of the other six sacraments could be administered; (c) an auditorium where many people could be gathered together to listen to the preaching of the gospel; (d) a communal home, blended of art gallery, theater, library, school and public forum; (e) a burial place for saints and heroes and the worthy men of earth; (f) and by no means least, a sort of symbolical dwelling place for God incarnate and His saints and angels, and therefore the most beautiful thing that could be made by the hands of men.

Now the question comes, of course, as to how far the type of church that satisfied these requirements for fifteen hundred years is applicable today to those historic Churches that retain in substance the liturgical worship of the Church of the past. I think the answer is: In every particular. However much the non-liturgical bodies may have diverged from the ancient standards in point of dogma and practice, I fail to see that anything of a similar nature has occurred elsewhere, at least to the extent of compelling any radical change in the fabric of the church edifice. In the Roman, Eastern and Anglican churches the same governing influences are supreme and with the same order of precedence. Occasionally one meets with the curious belief that mediæval churches were not intended for preaching and so are not entirely practicable today when preaching is so much stressed. The facts are exactly the reverse. Sermons were more prevalent in the past than today, and they were vastly more prolonged. Frequently from ten to twenty thousand people came together to hear a famous evangelist and adjournment was necessary to the public square. Even today the standard length of a sermon in Spain is one hour. It is safe to say that in Spain today (as well as in any mediæval city), as many sermons are preached in a month as are delivered in a year in a Protestant community. The vast naves of the old cathedrals and parish churches were built as they were, with their many columns, lofty roofs, great length and wide floor areas, quite as much because so they were best fitted for the hearing of sermons as because after this fashion they were most beautiful, awe-inspiring and conducive to reverence and spiritual stimulation. A good auditorium should be long, narrow, high and much broken up by columns, arcades, arches, and vault ribs or roof beams. The square form, beloved of Protestantism, is the least successful form one could adopt and most difficult for the architect to design.



Nave and Choir, St. Vincent Ferrer's, New York

Fine example of large monastic church, though lacking permanent and adequate furnishings

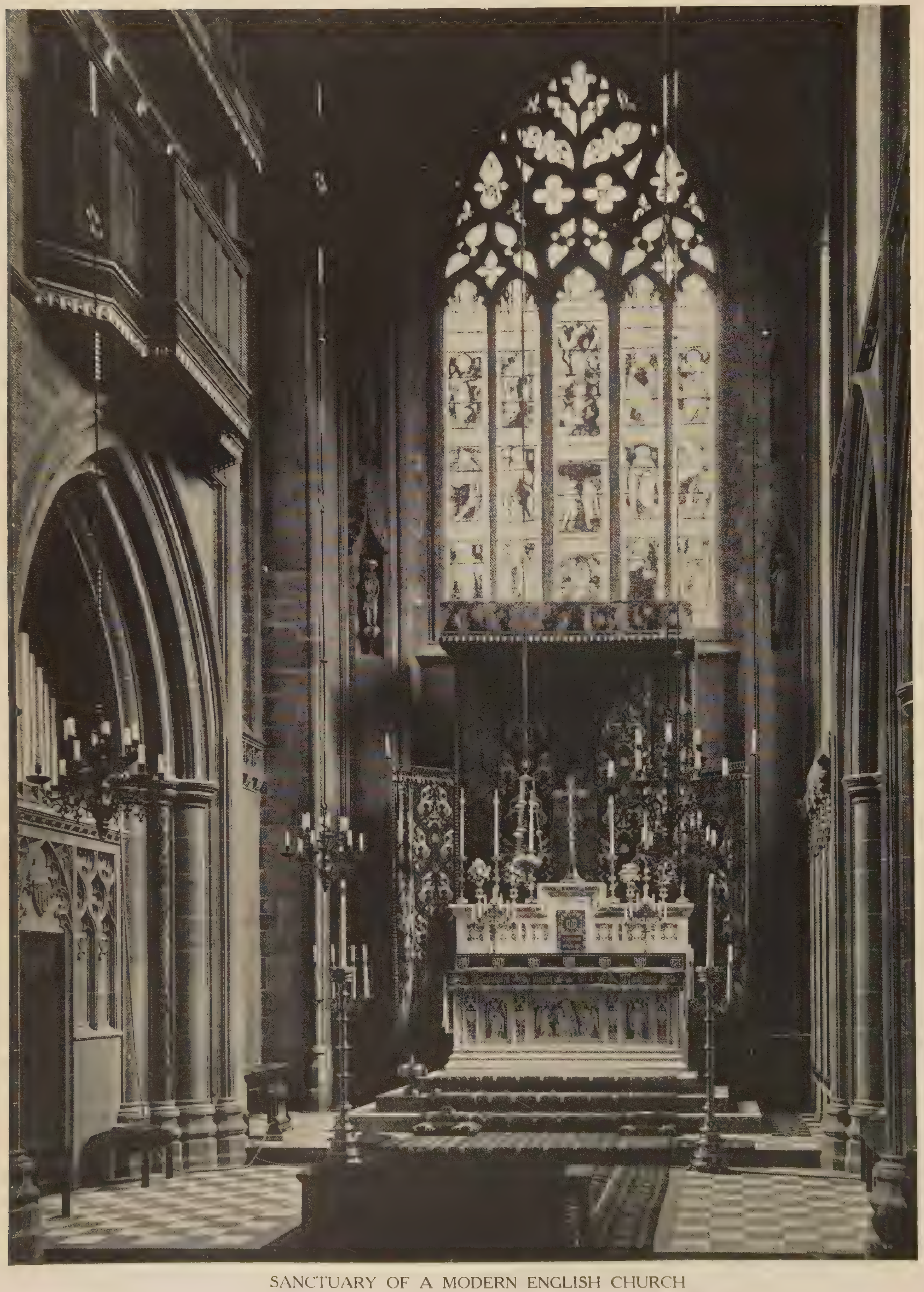


Altar and Reredos, St. Thomas', New York

Bertram Grosvenor Goodhue, Architect

The prejudice against columns is, like that against length, without foundation in fact. It is only a theory that people do not like to sit behind them, and I fancy it arose out of the jealousies engendered by the bad old custom of rented pews, now largely relegated into oblivion. A church is not a theater; seeing is not the only way of worshiping, and neither is hearing for that matter. With the growth of a more spiritual sense of religion after the dark days of modernism, these prejudices are gradually being abandoned and will ultimately disappear. On the whole, therefore, I think I can repeat that the general type of church acceptable for the first fifteen hundred years of Christianity may be accepted today as entirely adequate, practically without any changes compelled by modern conditions.

Allied with this consideration is the question of style. This is so large a subject and spreads out so widely that it is impossible to consider it here in detail. Of course we ought not to be obliged to question the matter at all; we ought to be able to build almost instinctively, as men built in the past, but equally of course we are not able to do any such thing. The sequence was cut as with a knife, and for three centuries the natural creative impulse along artistic lines has been moribund and we have had to act with explicit self-consciousness and artifice. Somehow we have to get back to better ways, and lacking a better, it seems to fall to archi-

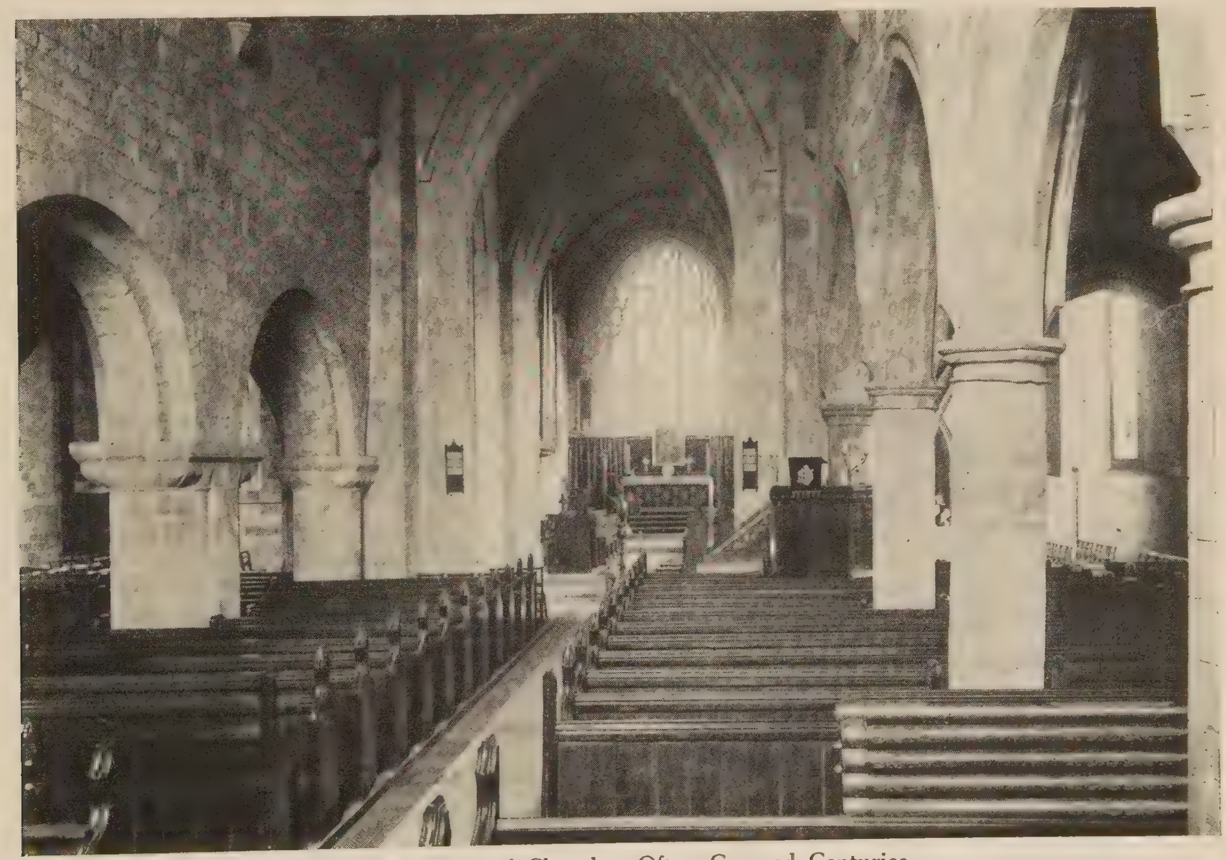


SANCTUARY OF A MODERN ENGLISH CHURCH
DORSAL, RIDDELS AND TESTER EMPHASIZE DIGNITY OF ALTAR
G. F. BODLEY, ARCHITECT

tects to assume this part of leadership, at least so far as the designing of buildings is concerned.

Hitherto there had of course been no such thing as one specific style for churches and another for secular buildings; at least this was true up to about the year 1825—and not only in America but everywhere else. So long as Europe had substantial unity, not only in religion but in its social organism and cultural standards, i. e., to the beginning of the sixteenth century, this was inevitable, for religion was as much a part of life as fighting, love-making and play, so the only variants grew out of racial, climatic and traditional differences. When Europe began to break up a new style in art had come into fashion, establishing itself everywhere, and as the new and constantly dividing religions seemed to possess nothing of that peculiar spiritual energy which revitalizes an art or develops new form; as it inflexibly set itself against beauty in all its aspects, and as it took over to its own uses the old churches instead of building new ones, nothing happened in architecture except—when the rare occasion demanded, as the great fire of London—submission to this new fashion of building, whether it was appropriate or not. Puritanism in America did produce an interesting variant of the latest English Renaissance, more nearly expressing current theology and ethics than anything that had happened before, but it was an exceedingly narrow and crabbed style and beautiful rather in contrast with what immediately followed than with that which had gone before.

When the romantic, neo-mediæval and Catholic movements began in Europe early in the last century it became immediately necessary to invent or return to a style more consonant with the new principles and ideals invoked, and of course the Gothic revival ensued. This went forward most successfully in England for 75 years, achieving a high point of excellence, and the same thing was true in other European countries and in America with less happy results. Richardson threw his big monkey wrench into the rather makeshift machinery of the Gothic revival in this country, and for 20 years the anomalous but intriguing style he had made his own held the field, finally dying out in the ineptitudes of his breathless camp followers, when Gothic resumed its sway and has continued until today, extending its domain over every known kind of Protestant denomination (except Christian Scientists, Mormons and Quakers) and only during the last 20 years finding its sovereignty disputed by newly recovered styles. These are: the original Colonial, a modified Lombard with occasional Byzantine infusions, and the late Spanish Colonial type more or less suggestive of Mexico and the California missions. The result of course is fairly chaotic and far from convincing. In any good-sized city you may find, almost side by side: a Roman Catholic church in "Plasterer's" Renaissance; an Anglican church from the Ile de France; a synagogue after the Arabic



The Building of Churches Often Covered Centuries

Note the round arches at left and the pointed at right mode (?); the Third Presbyterian in the style of the Auvergne; "Dr. Whipple's Church" (Unitarian) in English Perpendicular; the Main St. Tabernacle (Calvin Baptist) in a very delicate form of twelfth century Italian Lombard, and a Christian Science temple in pure Carnegie.

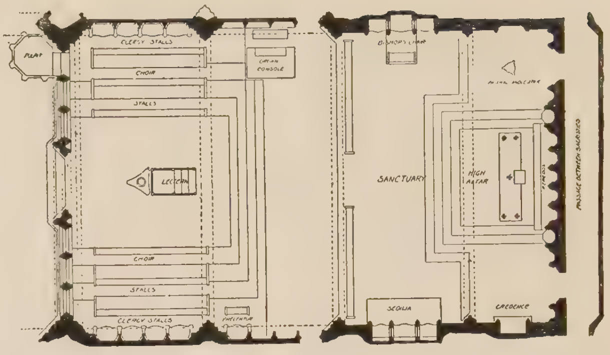
Well, what are we going to do about it? There is something wrong somewhere, but, assuming a virtue if we have it not, we still proclaim this a free country, and the right of private judgment extends to art (particularly architecture) as well as to Biblical exegesis and the interpretation of creeds. Fortunately, I have to deal only with the architectural expression of liturgical churches, and to me the answer here is limpid in its simplicity. "Go on from where you left off." By which I mean something like this. If the church is of the Anglican rite, pick up English Gothic where it was cut off at the time of Henry VIII, but do not stop there. The whole field of Gothic is available; find beautiful things where you can, and try to mould these varied beauties into a consistent whole, but do not stop there. The Catholic Church (of which Anglicanism claims to be a part) is a living organism, and three centuries have passed since the extinction of King Henry. Do try to get something that gives the note of life and of contemporaneousness. It can be done; witness Gilbert Scott's Liverpool Cathedral, to come no closer home. Other styles seem to me artificial, unless perhaps climate and local tradition justify a Spanish or Mexican cast in the Southwest. Even this does not seem very logical when you think of the genius of Anglicanism, but logic is sometimes a synonym for death, and I fancy that if I had the chance I should do a Spanish Renaissance Episcopal church in New Mexico or southern California, forgetting the Anglicanism and remembering only the Catholic norm.

St. Paul's Cathedral, Detroit
Cram, Goodhue & Ferguson, Architects

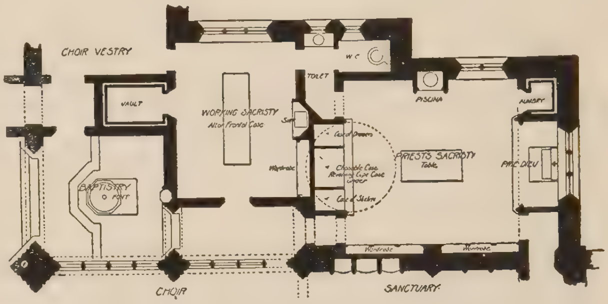
The Roman Catholic problem is only a little less simple. Of course all Christian architecture, like all Christian art, is the product of Catholicism, so the field of precedent is somewhat extended. Also the racial strains that go to make up the Roman Catholic Church in America today, are varied in the extreme, and for these two reasons the obvious deduction is not so clear as in the case of Anglicanism which, but for its brief flirtation with Romanesque, has held steadily true to English Gothic, or as it should be in the case of the denominations that derive directly from Puritanism. When the Catholic artistic recovery began about ten years ago it was led by able architects along various lines, Gothic, Lombard, Byzantine, with notable results, but it was all *architects' work,* and good as it is it certainly lacks that quality of unity and conviction one would expect in this place. At present it is sometimes impossible to tell the Fourth Presbyterian, the Episcopal St. Alban's, the Unitarian All Souls' and the Roman Catholic cathedral, the one from the other, so far as their externals are concerned. Perhaps it is not necessary, but one somehow feels that a Catholic church ought so to express itself to the passerby. One is inclined to urge a consistent return to the universal Gothic of Catholicism, at least as a point of departure, as the Anglican Church has done, for after all, Byzantine and Lombard are old stages passed on the way, while the Renaissance of Italy is hardly consonant, in its associations and implications, with the Catholic Church of America today, and certainly the modern French adaptation of this style is still less significant. The great trouble is that the Roman Catholic Church has too wide a field to draw on, too many great styles to its credit. Perhaps it is too soon to look for clear leading and consistency; the dark ages of artistic barbarism are too close at hand. Sooner or later, after various interesting experiments, there may come a settling down to a sound basis, and a new thing may grow out of Byzantine, Gothic or Lombard, which will yet be the old in new guise. After all, this is the principal point to be remembered: the liturgical church represents a living organism with a continuity that reaches back to the Feast of Pentecost; therefore the style must express this fact, but it must also adapt itself to modern conditions, for this is the genius of the Church; immutability in essentials, adaptability in non-essentials, and unchanging in a changing world.

This consideration has a bearing not only on style and on the general organism of the church, preventing the use of pagan forms (old or new) and the adoption of strange theatrical plans or dispositions, but as well on the question of modern inventions in construction and the use of substitute materials. The liturgical church, because of the peculiar nature of its doctrines and its worship, cannot consistently employ cheap substitutes for anything, or imitations or deceptions in any form, for this takes on the character of sacrilege. This rules out steel or concrete construction overlaid with imitation masonry, while a new style cannot evolve from these admirable structural expedients because so would wholly be lost the sense of tradition, history and continuous life. In this category of church building honesty is the only course that can be followed. I suppose it is hardly necessary to say that here also the fad that seems to be spreading elsewhere, of combining in one inharmonious whole a church and a hotel or office building or other revenue-producing investment, is forever and irrevocably barred.

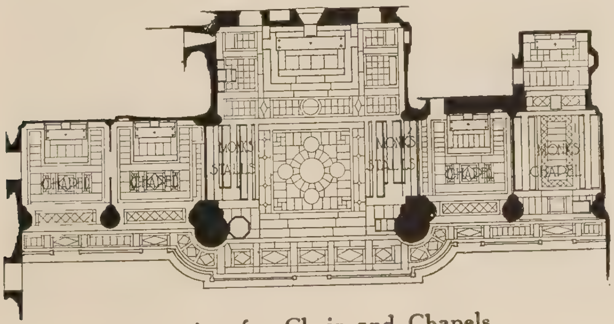
In any church there must be a real unity and coöperation among the several arts, but the opportunity for this is greater here than among the non-liturgical denominations. Not only may every art be used to the limit, but each must be transfigured by its function, for here everything is symbolical, down even to the smallest element of ornament in carving or color. Several of the arts have lagged far behind architecture in the great process of recovery, particularly painting and sculpture, and as architecture, when called into the service of religion, cannot do without these arts, it is desirable that in some way they should catch up. Unfortunately, the art schools are almost as oblivious of religious art as were the architectural schools 20 years ago, so the opportunities for training are reduced to a minimum. Well, in spite of the high disfavor of the academic institutions, architects did manage to become great church builders, so there is no reason why painters and sculptors should not win equal success under similar conditions.



Plan of Typical Choir and Sanctuary



Arrangement of Priests' Sacristy, Baptistry, and Working Sacristy



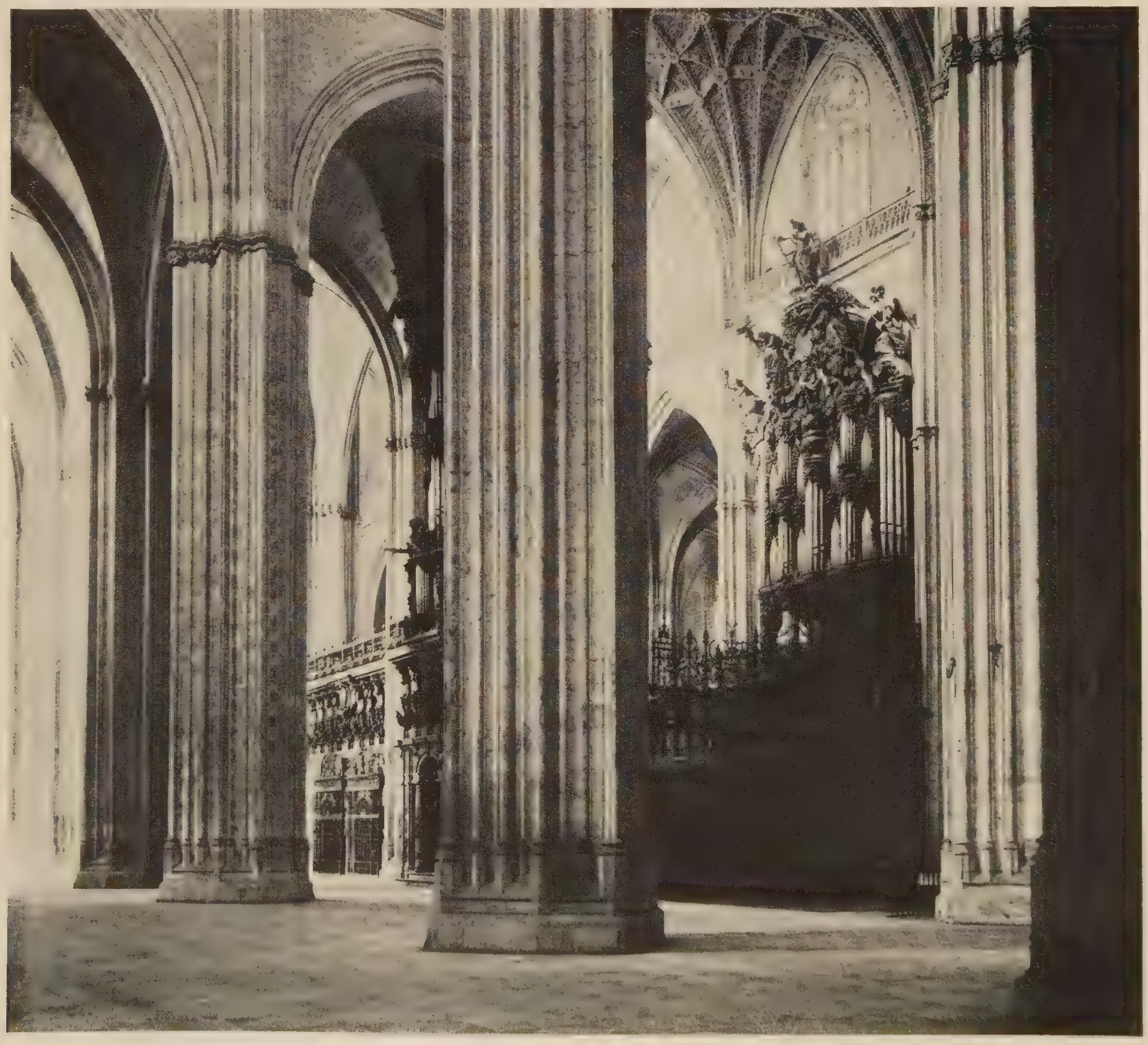
Suggestion for Choir and Chapels

Now it may be admitted at once that certain of the principles here laid down will not find willing support from some clergy and vestries and building committees. During the past century the customs and theories of Protestantism have crept into the liturgical churches, particularly the Episcopalian, with results that were fast bringing them into line with Evangelical structures. The prejudice against columns, the intrusion of side and transept galleries, the reduction of the sanctuary into a mere platform or niche, the elimination of subordinate chapels, altars and shrines, even the fear of a long nave and a high roof—all these infelicitous things held for a while, and are still to be encountered here and there, but they must be met with firmness and their irrationality demonstrated, for one and all they strike at the root of that quality which distinguishes the liturgical from the non-liturgical churches.

I shall not try to lay down a series of simple rules to guide a young architect who has never been to a Catholic Mass and whose knowledge of the Episcopal Church extends perhaps to assisting at "High Matins" once in a while. It cannot be done. It would be easy enough to epitomize "The Parson's Handbook" (that excellent work by Dr. Dearmer) and tell all about the arrangements of a chancel and sanctuary; what should be the dimensions of an altar, the disposition of its tabernacle, gradine, foot pace and steps; where the sedilia ought to go and the credence and the piscina; the place for a sanctuary lamp, the function of a reredos, the nature and purpose of parclose screens, and all that sort of thing, but what would be the use if the names meant nothing and the youthful practitioner were substantially ignorant of the informing dogma, the reason for and nature of the established devotions, the history and tradition that go back for more than 15 centuries? The way to learn how to build a liturgical church, Roman, Anglican or Orthodox, is to become steeped in the religion itself both in theory and practice, and then become familiar with the long sequence of church building back to the Edict of Toleration. There is no teaching in architectural schools that gives assistance along these lines, fruitful (and profitable) as they are; one must pick it up for oneself.

It is a field worth investigating. Apart from certain spiritual benefits, the demonstration of which forms no part of the function of this paper, there are other considerations of moment. Much of the work architects are called upon to do is ephemeral; the thing built today may be scrapped in 20 years. I myself have seen three buildings (the first by McKim, Mead & White) constructed in succession on one street corner in New York. Liturgical churches are apt to be reasonably permanent; they do not, like the beautiful Presbyterian church in Madison Square, rise only to fall and give place to a life insurance building. With them one builds for centuries. Again, by their very nature they must have dignity, majesty, beauty if it is only the beauty of mass and composition and texture of materials. They are not likely to be involved in a dominating maze of "institutional" adjuncts or compromised by commercial adhesions. Finally, they must have historic suggestiveness as well as propriety, and this means the chance to go back and study great styles, finding out why they were great and where their beauty inheres, after which—to go on and see how "these dead bones may live" through the infusion of something of the vital present.

I do not suppose there is a greater opportunity in architecture than just this of serving the liturgical churches, particularly now that the Roman Catholic Church is seeing the error of its old ways ("old" in the sense of the last two centuries) and is now coming forward to demand the best architecture and the best arts that are obtainable. There is no doubt about it; in spite of Fundamentalists and Modernists, religion is coming back, and the wise man will prepare himself to serve this reëntrant force, not only for the compensation there is in it—both in point of fame and pay—but because it is a joy in itself and a dynamic contribution to well-being.



Organ in Choir, Seville Cathedral

Renaissance ornament in Gothic church

Institutional Churches

By JOSEPH HUDNUT

Professor of Architecture, University of Virginia

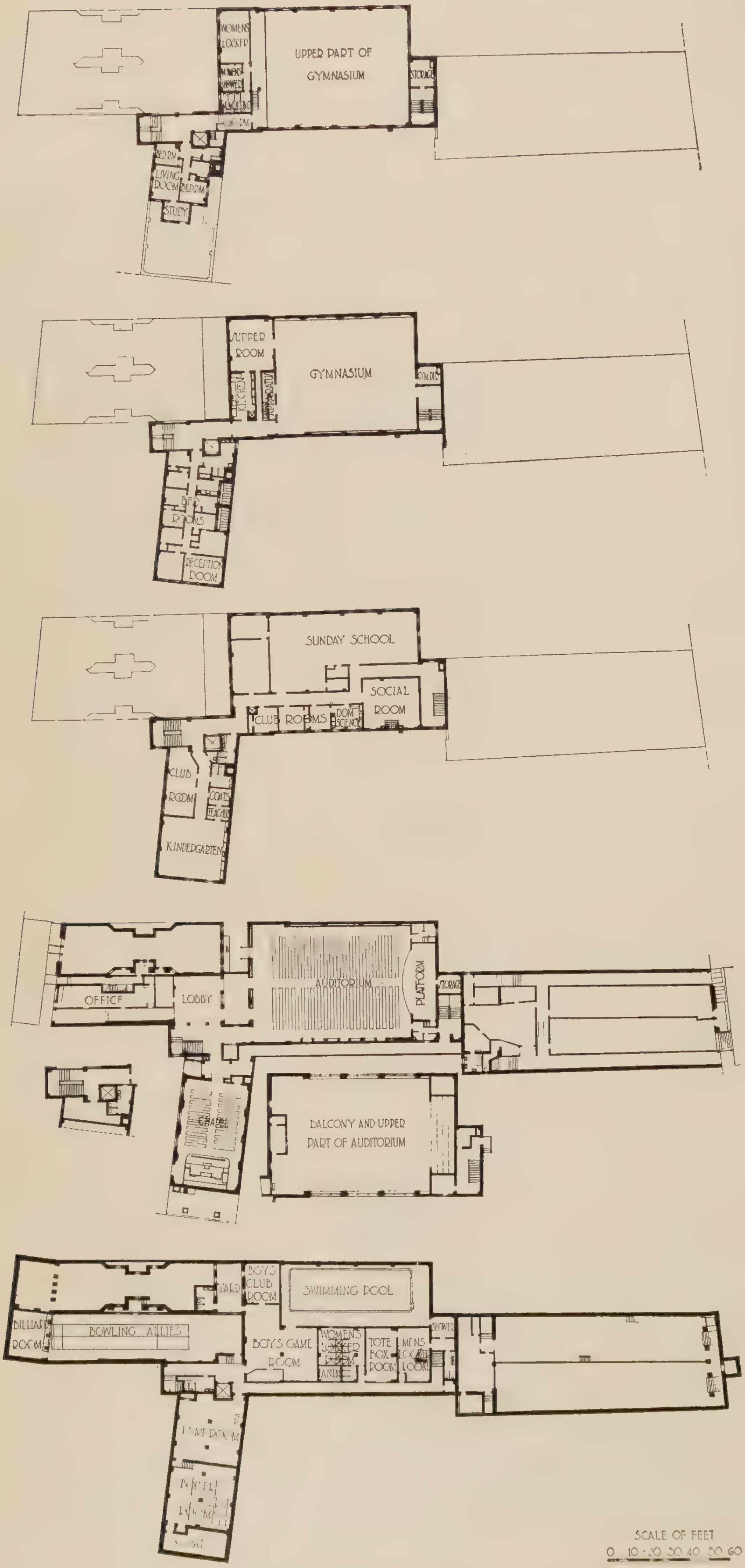
BY the "institutional church" I understand that type of church, existing in almost every denomination, which is primarily devoted to some kind of social usefulness; a church which, conscious of its obligations to society no less than to the individual, does not confine its activities to public worship and the administration of the sacraments, but actively fosters every good tendency in human thought and feeling.

I think of the institutional church as one which, because of its concentration on a more exigent task, is indifferent both to dogma and to ritual. It is not, in great measure at least, concerned with the Hellenistic and scholastic subtleties with which the teachings of Jesus are overlaid, the doctrines which crystallized at Nicea, Heidelburg, or Westminster; nor is it absorbed in the artistry of its service, in forms and methods of procedure, in making more dramatic a certain kind of religious experience. Nor is it intent upon the interpretation or advancement of some hierarchic authority. It is devoted rather to a practical effort to translate the profound and beautiful morality of Jesus into such luminous and compelling terms as to make it an active agent in the social life of our own time.

Doorway to Parish Building, Congregational Church, Wellesley, Mass.

Carrere & Hastings, Shreve & Lamb, Architects

The principle which underlies the activities of this type of church is the conception of life as a unity. Life cannot be divided, except in the imagination, into "religious," "social," and "educational" experiences, nor can any of these experiences be cut up into emotional, intellectual, and physical elements independent of each other. True religion is not a code of ideas and philosophic principles; nor is it an emotional exaltation or æsthetic pleasure felt in prayer or song or ritual. Religion is a way of living, in the manner in which we recognize God in our lives. It is something which touches us at every moment of consciousness, in every human relationship. The institutional church recognizes this immanent and universal pervasion of religion through



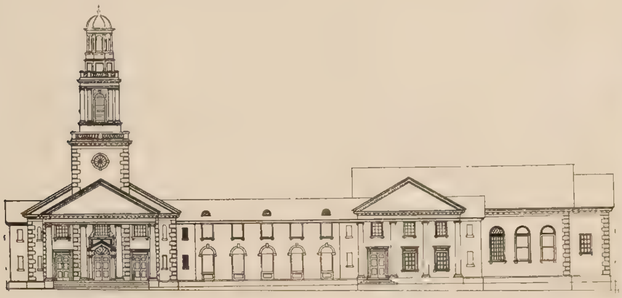
Floor Plans, Church of All Nations, The Bowery, New York
Julius Gregory, Architect

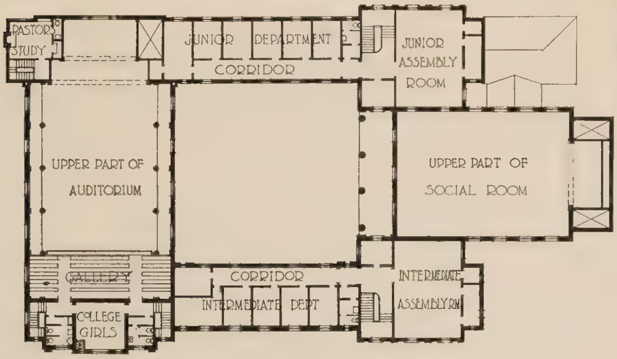
life. Like the mediæval church, therefore, it is concerned with every activity of life; with social intercourse, teaching, entertainment, recreation, organized charity, music, art, and the drama. Unlike the mediæval church, it does not attempt to subordinate these to the requirements of its own existence; its purpose is rather to inform all of life's activities with the quickening spirit of Christian truth, as the thinking men of our own day see that truth. The church is to be the great educator, not of man only, but of man's institutions. The Christian spirit is to be felt deeply, though unconsciously, in every human activity, becoming less a code applied to life, less a form or ceremony outside of life, and more a habit of life.

These ideas, which are those of the spiritual leaders of the church rather than of the masses of church members, have led to a new conception of what is required in a church building. The churches of the past century, which comprised little else than a great meeting hall embellished with the sentimental vagaries of the "Gothic revival," are wholly inadequate for this new usefulness. Even less adequate are the churches which are designed, after the models of mediæval churches, primarily as a setting for a liturgy; churches which are, in fact, only an extension of a liturgy into stone and wood, a concrete expression of its symbolism. The modern leaders are likely to be a little impatient with an architecture of symbolism, even a beautiful and ancient symbolism, if it is found to be costly, ineffective and troublesome. Especially are they impatient with an architectural symbolism which no longer possesses any meaning which can be understood by men of our own day or which, being understood, has no longer power to kindle the soul or even to touch the imagination.

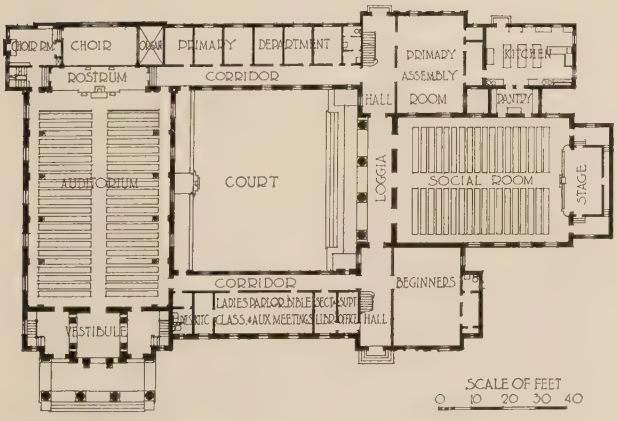
What is wanted for the institutional church is a building that is more than a house for preaching and for worship; a building that may be dedicated to every good work that can enhance the sum of human happiness. It is to be associated in some way with every right exercise of man's social, intellectual, and physical powers. Schoolrooms, recreation halls, clubrooms, and entertainment rooms are as relevant as is the large assembly room for those who participate in religious rites enjoyed in common; our worship of God is to be just as manifest in the one as in the other, and just as acceptable to Him.

No longer therefore is the church building to be only a great monumental hall; no longer only a mighty symbol; it is to be a grouping of educational, social, and recreational facilities; that is to say, of religious facilities. It is to be a social center, a composition of a hundred rooms, various in size, arrangement and design, as are the social energies of man, but fused together by a common spirit and a common dedication. The point of view of the men who are directing this vast integration is a practical and immediate one. They want a useful building, organized like any other useful building of our own day, in a straightforward and simple way. They want the arrangement of rooms, the circulation, the construction and the decoration to be governed by the requirements of the particular usefulness which they have in mind. Christianity is a practical doctrine closely related to life, and it demands in architecture neither a traditional posture nor a romantic expression. A church building is a tool to be used in a greater and less visible construction; a weapon to be kept bright and keen for service in a persistent battle against the terrible evils that exist in human society.


Main Elevation



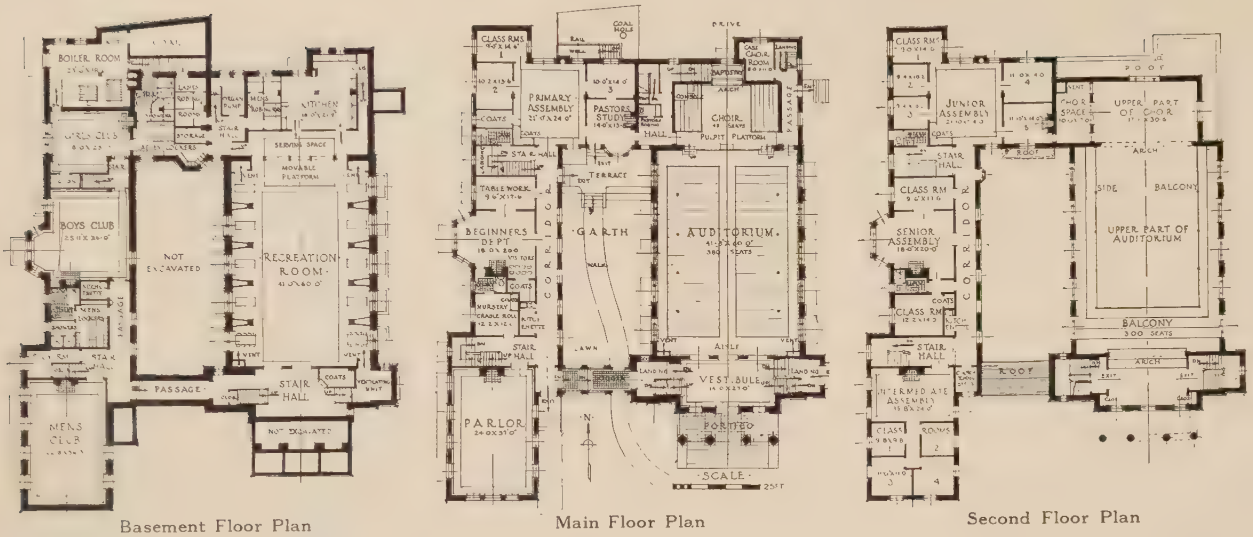
Upper Floor



Rivermont Avenue Presbyterian Church
Lynchburg, Va.
Joseph Hudnut and Craighill & Cardwell, Architects

Side View of Portico and Spire
Congregational Church, Wellesley, Mass.

Perhaps if we could place ourselves outside of our own time and view it from afar we should see in these somewhat anarchic buildings of the institutional church the beginnings of that great adapta-

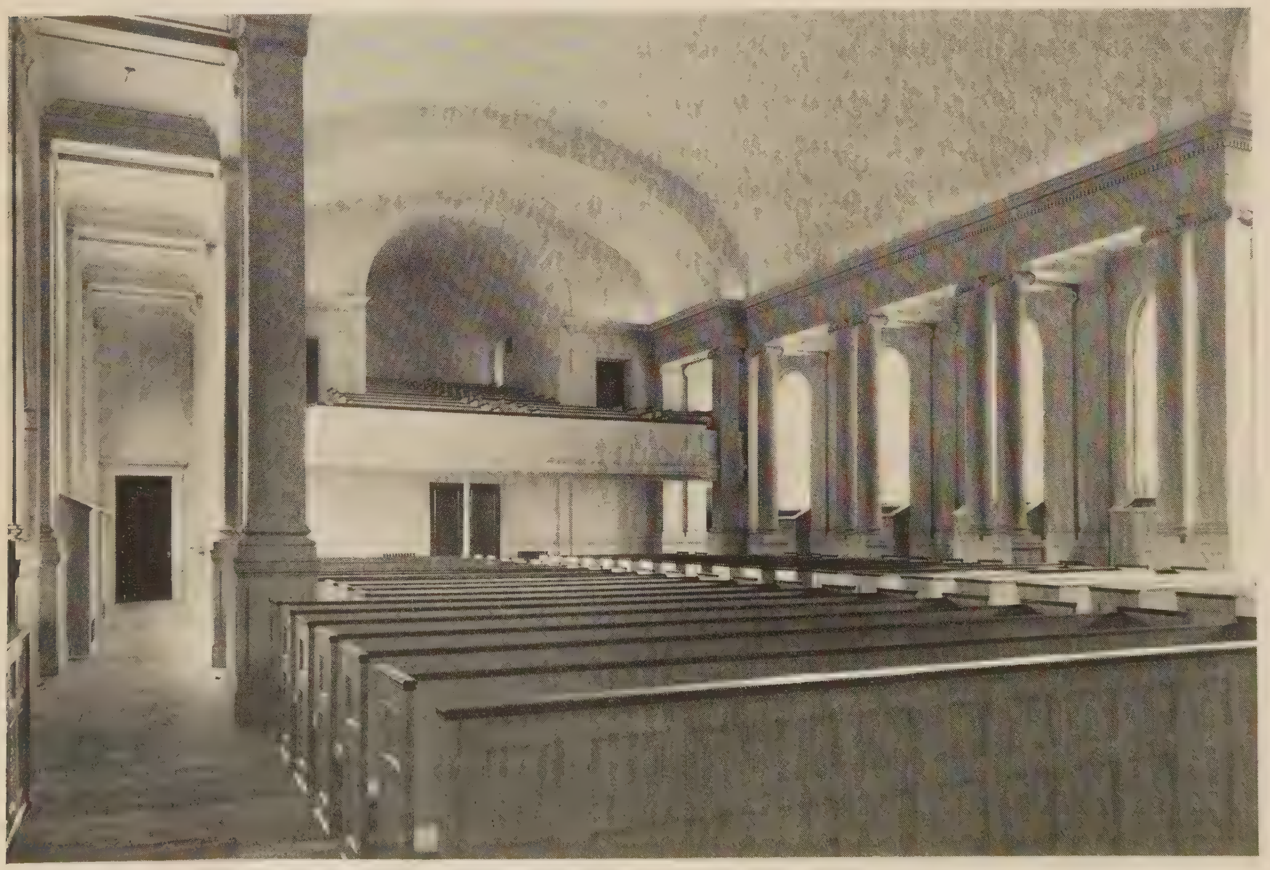


Basement Floor Plan Main Floor Plan Second Floor Plan

Lafayette Avenue Baptist Church, Buffalo

Frank A. Spangenberg, Architect; Earl Martin, Associated

tion. Perhaps we should see here the materials of that great rhythm in which the idealism of our day will some time define itself, the first intimation in architecture of that synthesis between science and emotion which is to characterize the religion of the future. The joyous and practical architecture which will express this synthesis will originate from some new demands of usefulness. It will be organized upon a modern principle and designed with a modern respect for tradition and enthusiasm for progress. We cannot of course say what force will reduce its useful and practical structure to significant harmonies of line and form and space, but that force will not be a conscious or archæological force. It will be the same spontaneous and implacable force that gave grandeur and sublimity to the useful structure of Amiens, for architectural forms grow out of the requirements which they must meet.



Auditorium, Looking Toward Narthex, Congregational Church, Wellesley, Mass.

Carrere & Hastings, Shreve & Lamb, Architects

Plan and Design of Christian Science Churches

By WILLIAM EDGAR MORAN

of Goodwillie & Moran, Architects

IN considering the design and planning of Christian Science churches, it is necessary, primarily, to understand something of the history of this religious body, its differences from other Churches, and the fundamentally distinctive manner in which its organization functions.

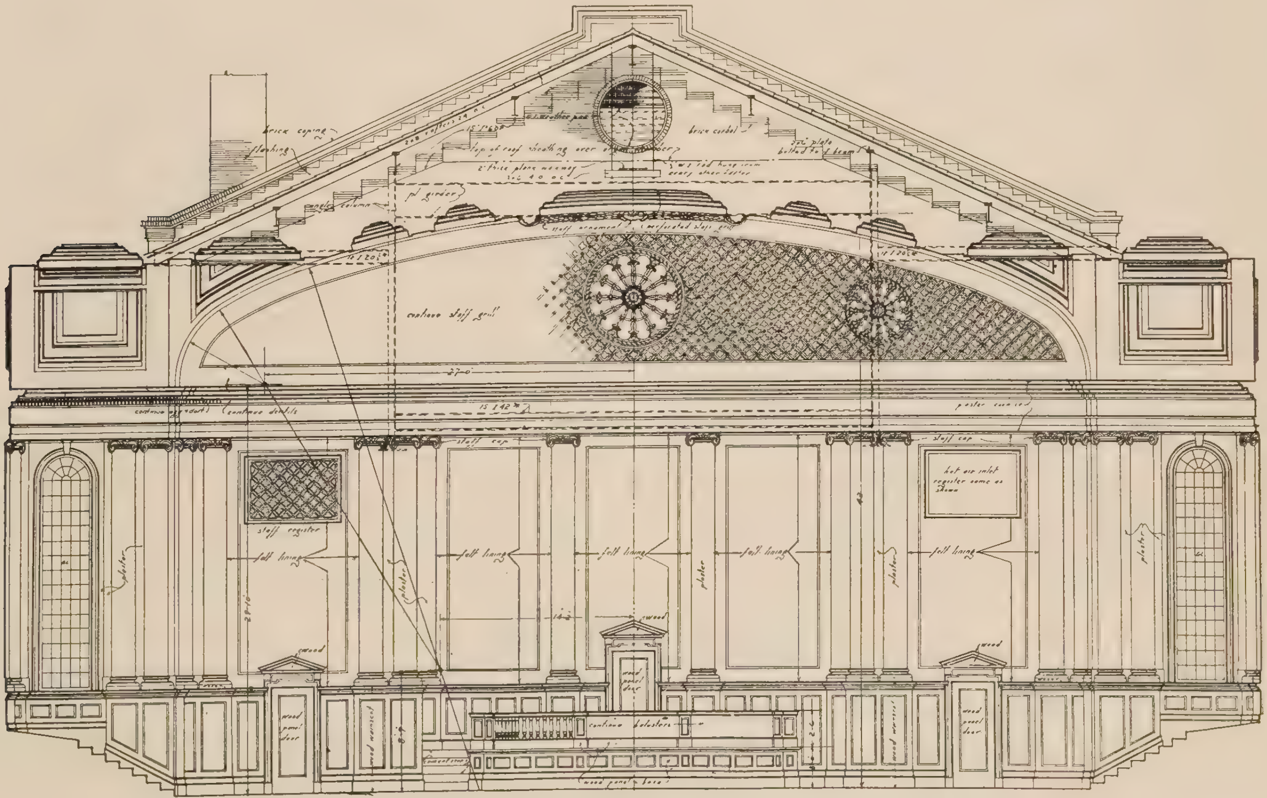
Historically, it must be noted that the principles of Christian Science were discovered in the year 1866 through the inspiration of Mary Baker Eddy. The original church of this denomination was not chartered until August 23, 1879. The earliest church in use was that built at Oconto, Wisconsin, in 1886, a small frame structure; while on September 29, 1892, when reorganizing the Church, Mrs. Eddy gave the plot in Boston on which the present Mother Church stands. On this plot in 1894 a building was erected for the individual purpose of church services, and in eight years the church had so grown as to need greatly augmented space, which led to the laying of the corner stone of the extension in 1904.

From this beginning in the one small church of 1879, the erection of Christian Science churches has continued and extended, not only all over this country but also throughout the greater part of the civilized world, until today the number exceeds 2,000 churches, a growth unparalleled in religious history.

Although the Christian Scientists, as has been noted, trace back their actual religious organization only to 1879, their belief, insomuch as it differs from that of other Protestant bodies, is a return to the teachings of primitive Christianity, with an entire absence of the formalism which, through the course of the 1600 years since Constantine made Christianity the State religion, has been added to and become a great part of the orthodox ritual, both Catholic and Protestant.

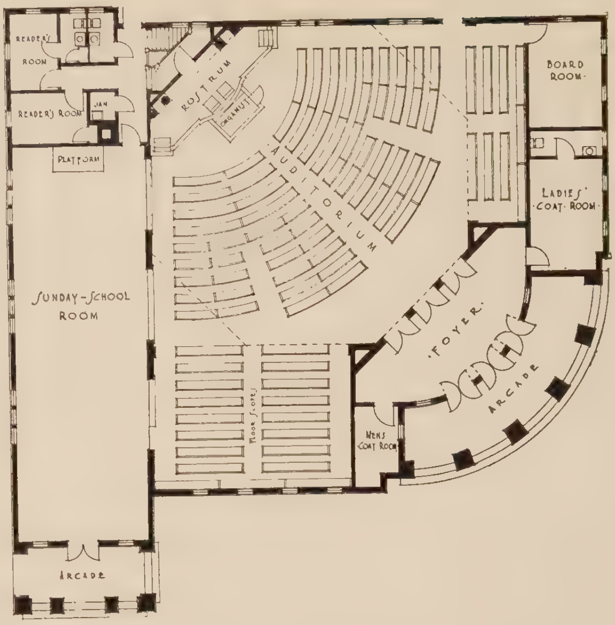
In their organization, each of the branch churches is a pure democracy. The church organization comprises a board of trustees or directors elected for three years, so that a majority remain in office from year to year; two readers, a clerk, and a treasurer. The readers are also elected tri-ennially, and, by a wise provision, are precluded from more than one term of service. By this means the opportunity for service to the church is widened. There are no professional pastors or priests, all the officers being elected for stated terms by secret ballot in annual meetings. There are various committees to which the actual work of the church is delegated:—ushers, house, publication, etc., all selected annually and usually non-succeeding.

Another great divergence lies in the complete lack of all forms of so-called "social service," which has grown to such an extent in the orthodox



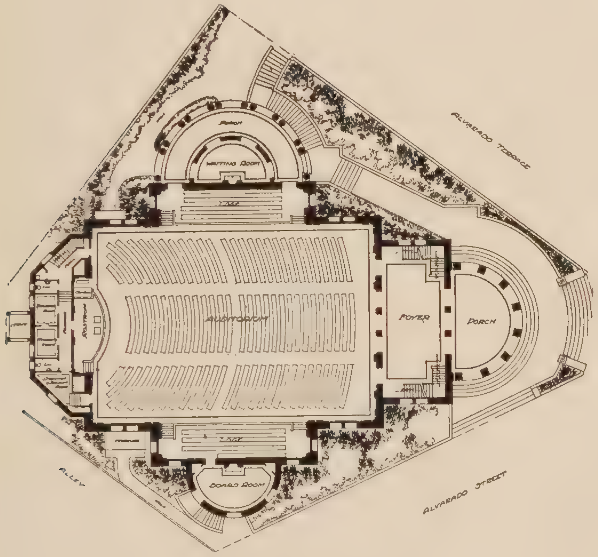
Transverse Section Through Auditorium, Looking Toward Rostrum
First Church of Christ, Scientist, Los Angeles
Elmer Grey, Architect

churches as to be of importance almost equal to the religious service, so that it has become necessary to make a sharp division between religious and secular work. The Christian Science Church work, in this sense, lies rather along outside welfare lines, as instanced in the activities attending the Japanese and Halifax disasters and the World War; thus the work does not require special equipment, thereby obviating the necessity of providing for guilds, cadet corps, parish house activities, and other forms of purely secular service. There is another feature of the Christian Science services which is not commonly met with elsewhere; that is, the practice of "visiting" or meeting which goes on before and after the services; but the greatest distinction to be noted is the custom of giving public testimony at the Wednesday evening services, and, as has been said, the entire lack of ritual and form in the conducting of the service itself.

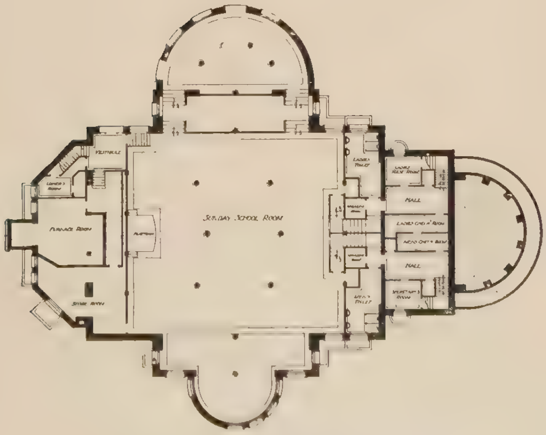


Excellent Example of Semi-circular Plan
Note ample areas of foyer and Sunday School room

To properly plan a Christian Science church, therefore, a comprehensive knowledge of all these distinctions must be borne well in mind, even before the exigencies of site and cost are considered. As the chief feature of the service is the reading of the Bible and Mrs. Eddy's "Science and Health with Key to the Scriptures" from the desk by the two readers, the building must be planned to make the platform the focal point of the plan design. This does away with all possibility of the use of what has been termed the traditional or elongated plan, which is so appropriate in churches where the service is mainly read by priest and the worshiper and where the sermon is only one part of the service. This difference in scheme of worship does away with any need for chancels, transepts, naves, choirs, etc., which make such beautiful plans, and which add so much to the fascination of the Gothic cathedrals. The requirements of the Christian Science services lead rather to the square plan of auditorium, similar to one type of denominational church plan, which rarely makes extreme length a feature; so that, in consequence, in the first analysis, a plan in which all the seats would be at an equal distance from the reading desk, thereby attaining equal sight and hearing for all, would be ideal from all points of view.



First Floor Plan



Basement Floor Plan
First Church of Christ, Scientist, Los Angeles

At this point, it is necessary to consider the feature spoken of before, that of the testimonial meetings. At these meetings anyone in the congregation may, as he or she desires, arise and speak on subjects relative to Christian Science, and this brings out the absolute necessity for the greatest degree of acoustical development to make a serviceable church, and it is this requirement which in the final analysis gives as the ideal plan a semi-circular space with the readers in the center, approaching the semicircle, along the lines used in "academies" and the like. As a general precept, one might say that the church plan of the auditorium or audience hall type, as suggested in certain plans shown here, should be the basis of all planning for Christian Science places of worship. This is, to a degree, true.

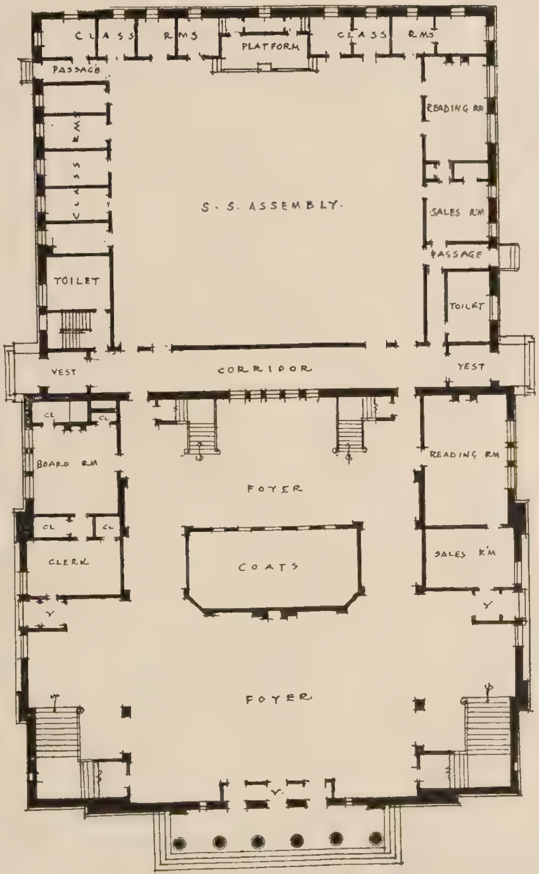
Granted the auditorium scheme, it follows that there should be an entire absence of supports which would break the vision and interfere with hearing of the reading, and this has led through several ramifications to the use of the sloping floor plan, in which the entire body of the church is comprised on one floor, sloping toward the readers' desk, with ramps and stepped aisles, and without the use of galleries. This plan I believe to be an individual feature of Christian Science churches. It has several claims for attention: First, that the entire congregation is on one floor. Second, that the view of the individual is, by means of the sloping floor, well taken care of. Third, it eliminates galleries with their resultant reverberations. It is, however, most difficult to design an interior satisfactorily with this scheme, and the extreme sloping floor is not so comfortable to stand on in the visiting periods referred to previously.

The first church edifice, called the "Mother Church," in Boston, followed in general design and plan the orthodox layout. It had a tall tower, was built of somber granite, and with its stained glass windows could hardly be distinguished, especially in its external aspect, from a building of the Congregational or some other orthodox body. This plan was followed by the Concord church, but in planning the extension to the Mother Church, an entire change of scheme was made. Instead of Richardsonian precepts being followed, recourse was had to earlier precedents and a building more nearly approaching the early Christian churches of Rome was achieved.

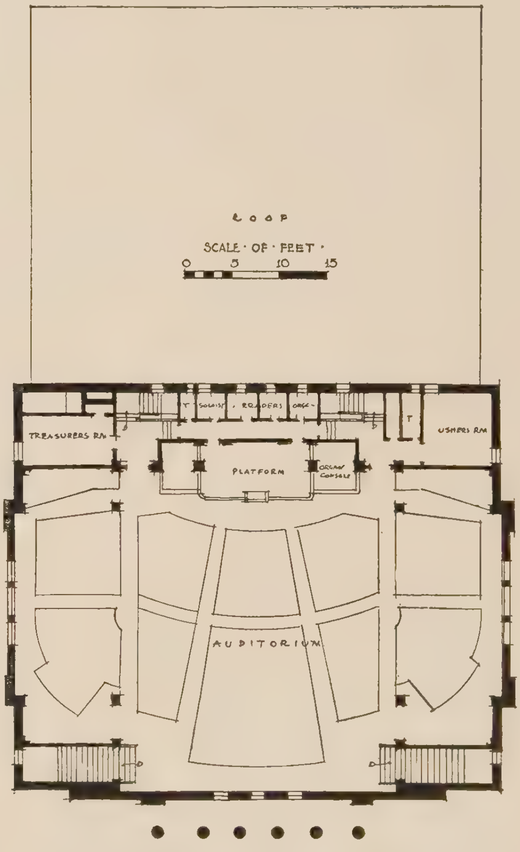
The basilica type plan, as shown in these pages, has proved satisfactory in a greater or less degree, and is perhaps more economical in construction than the true audience hall variations, but it is defective through the necessary use of columns, which are most undesirable. It is, however, possible to provide for it an interesting interior development, and it approaches more nearly to what might be termed the traditional type of the Christian church, for we know that the earliest Christian church was erected under the rule of Septimus Severus, about 180 A.D., and therefore the basilican plan undoubtedly provided the inspiration for early Christian designers.

The plan of the Mother Church extension, generally circular, has been followed in several instances, as shown here. This scheme traces its architectural lineage from the Pantheon in Rome, the Temple of Vesta, and other circular temples. The feature of "visiting" has brought about the incorporation of generously large foyers, as it is here that a great deal of the healing work can be done.

Instead of varying forms of the sacristy, robing room, etc., the requirements back of the platform



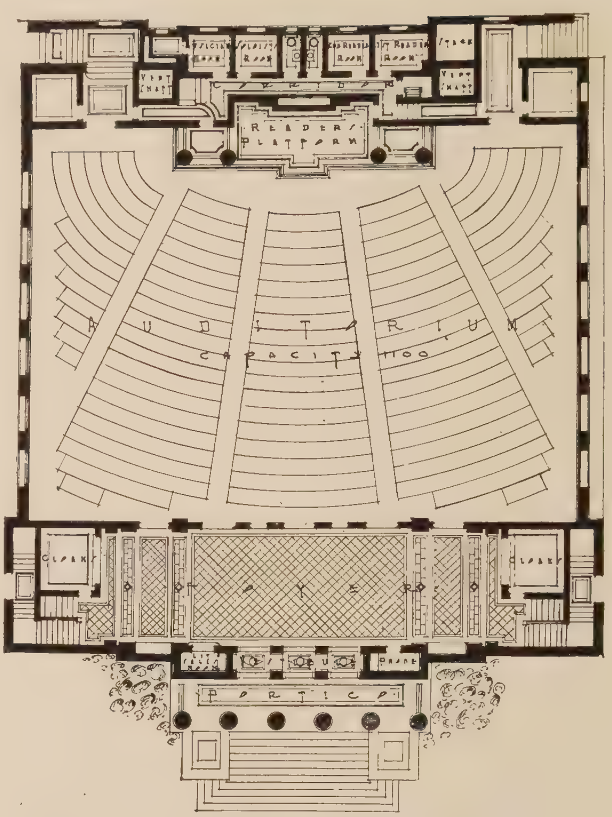
First Floor Plan for Christian Science Church
Unusual provision for social rooms



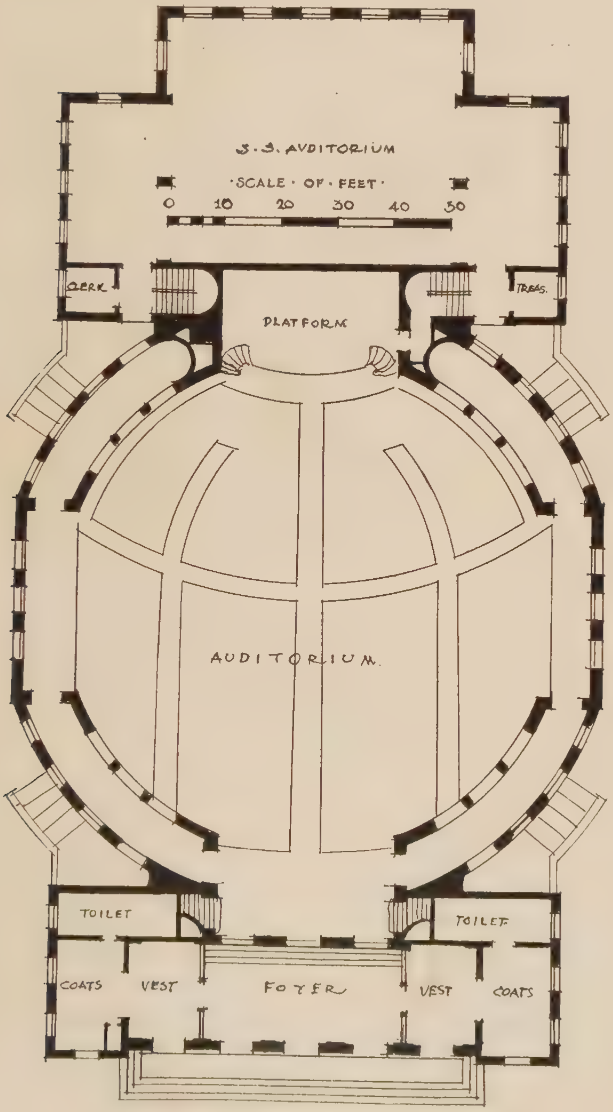
Main Auditorium Placed on Upper Floor
Note nearness of worshipers to desk

are uniformly simple; small rooms for the two readers must be provided, and one or two rooms for the organist and soloist, with adjoining toilet facilities. The organ is usually arranged in a gallery above the reading platform, and in size this platform is reduced to a minimum, there being no need for greater depth than will accommodate the readers' desk and chairs. In some cases, the soloist (a choir not being customary) also occupies a chair on the platform, and the organ console is concealed below the platform level. As there are no formal services for christenings, weddings or funerals, connection between platform and church need not be direct.

The extra-service requirements of the church are simple; off the foyer must be provided ample coat rooms and toilet space; a board room of such size as will accommodate the requisite number of directors or trustees; an ushers' room where they may hold their preliminary services; and a treasurer's or committee room should be provided; and reading and sales rooms for the dissemination of church literature are sometimes made part of the church plan. The relation of the Sunday School to the church is of extreme importance, and with the increased development of this work, growing stress is being laid upon proper arrangements being made for this department of the church organization. The double-level arrangement, in which the Sunday School occupies the ground floor, with the church foyer in the front giving access by means of stairs or ramps to the main auditorium, which occupies the so-called second floor, is quite common, and with limited ground space perhaps solves the problem satisfactorily. The ideal arrangement, however, consists of a separate building, connected by corridors to the church proper. In this wing should be provided space for the infant class, certain individual classes and a general auditorium, to be used by arrangement of seating for class instruction, as well as for the services before and after study periods.

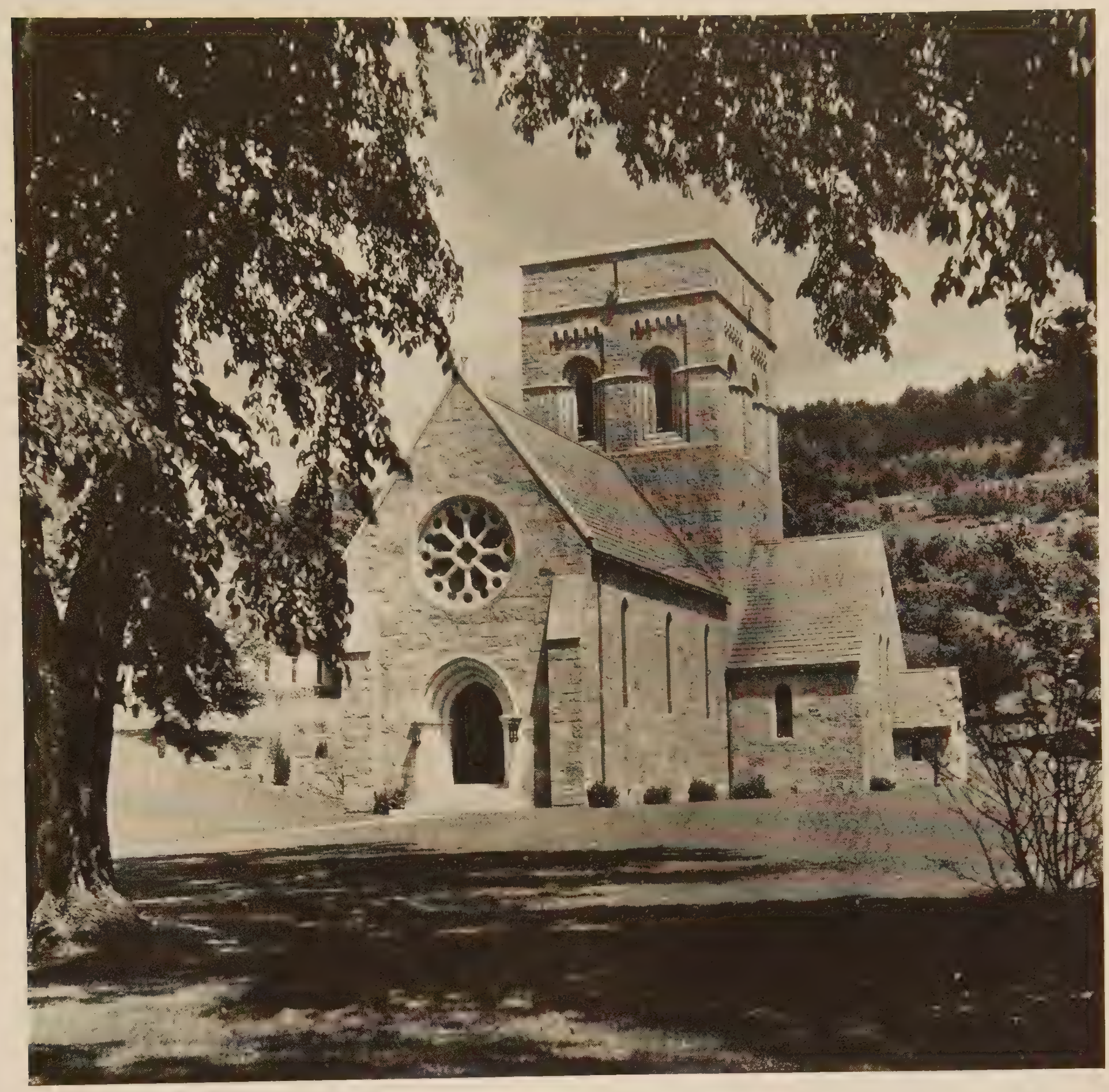


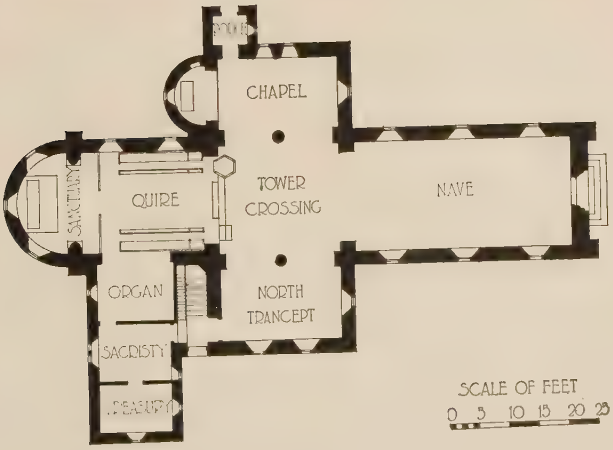
First Church of Christ, Scientist, Lakewood, O.
Charles D. Faulkner, Architect



Worshipers Close to Readers' Desk
Ample spaces for social uses

As to the question of the type of architecture particularly featured in Christian Science churches, its religious inheritance makes the use of Classic Roman with its variants Colonial, Georgian, etc., the preferred type, and this has, with few exceptions, been the rule since the erection of the extension in 1904. All symbols, with one exception, are eschewed entirely, but the limited use of quotations in lettering is approved. The classic severity of the generality of the church designs makes simplicity of decoration and coloring rather to be preferred to sumptuousness of carving and enrichment of moulding, and quiet dignity to multifarious interest.

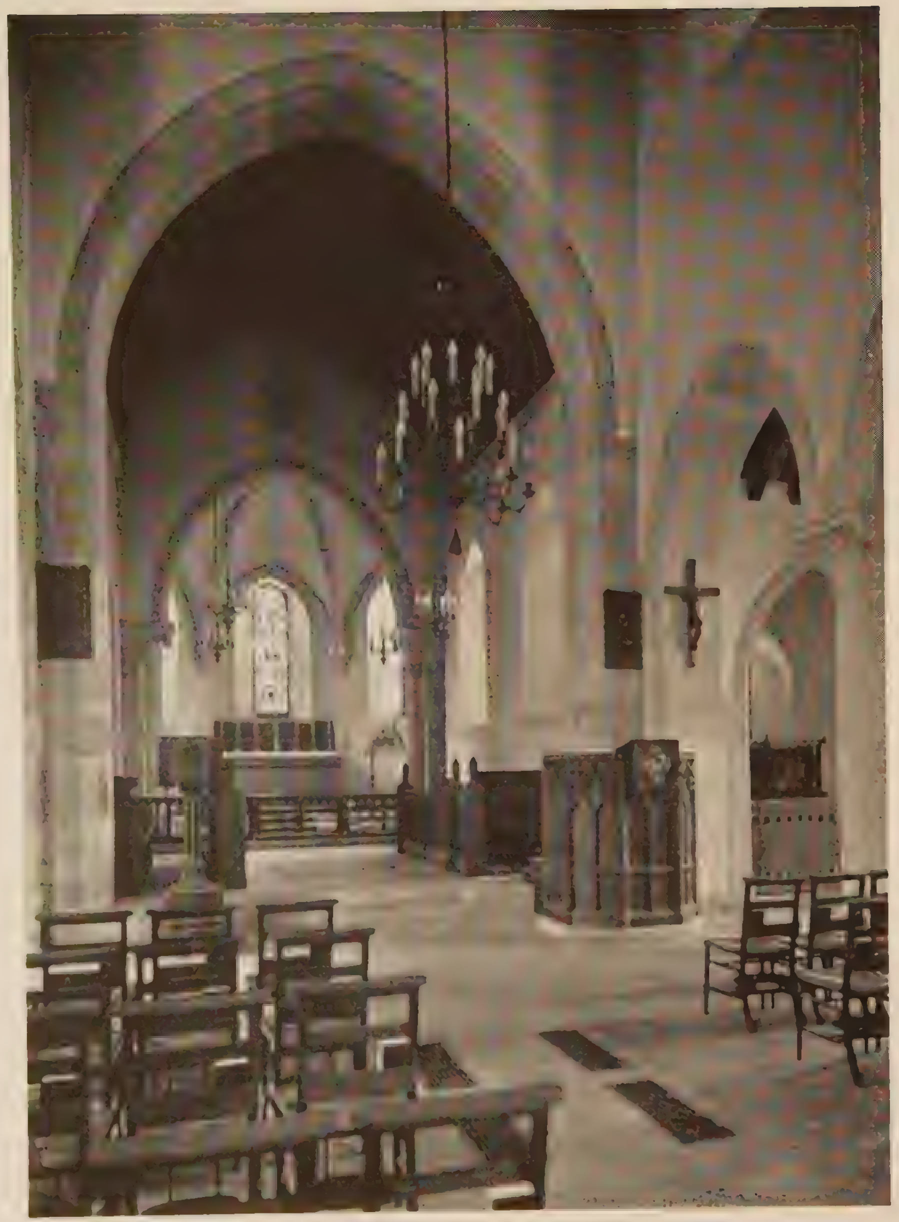




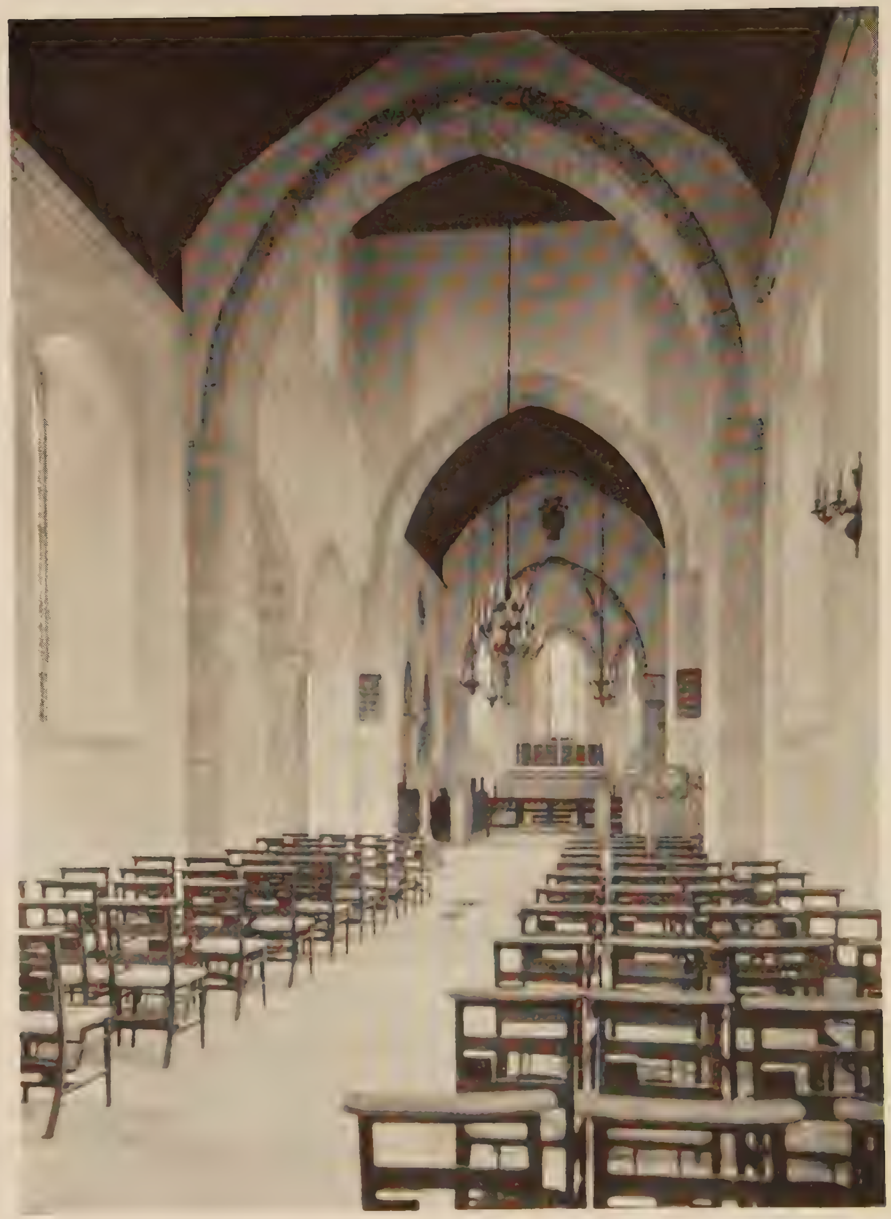
THIS rarely beautiful example of the small country church was made possible by the munificence of an individual donor who has provided in a crypt a mausoleum for the members of her family. The building, which stands in ample grounds of its own and suggests the wayside churches of Normandy or certain old country churches built in England during the Norman period, is of local granite with a square tower at the crossing, and the transepts which the cruciform plan has made possible are in effect chapels, that to the south having its own apse and altar.

Within the church the piers and the arches which carry the tower walls across the nave, transepts and choir, as well as certain arches elsewhere, are of granite, the walls themselves being plastered. Chairs are used instead of pews or benches for seating the congregation, and all oak woodwork is given the simplest of finish. While it has been built but a few years, the church has already become a treasure house of art in many forms, the result of the donor's interest and generosity.

ALL SAINTS' CHURCH, PETERBORO, N. H.
CRAM & FERGUSON, ARCHITECTS



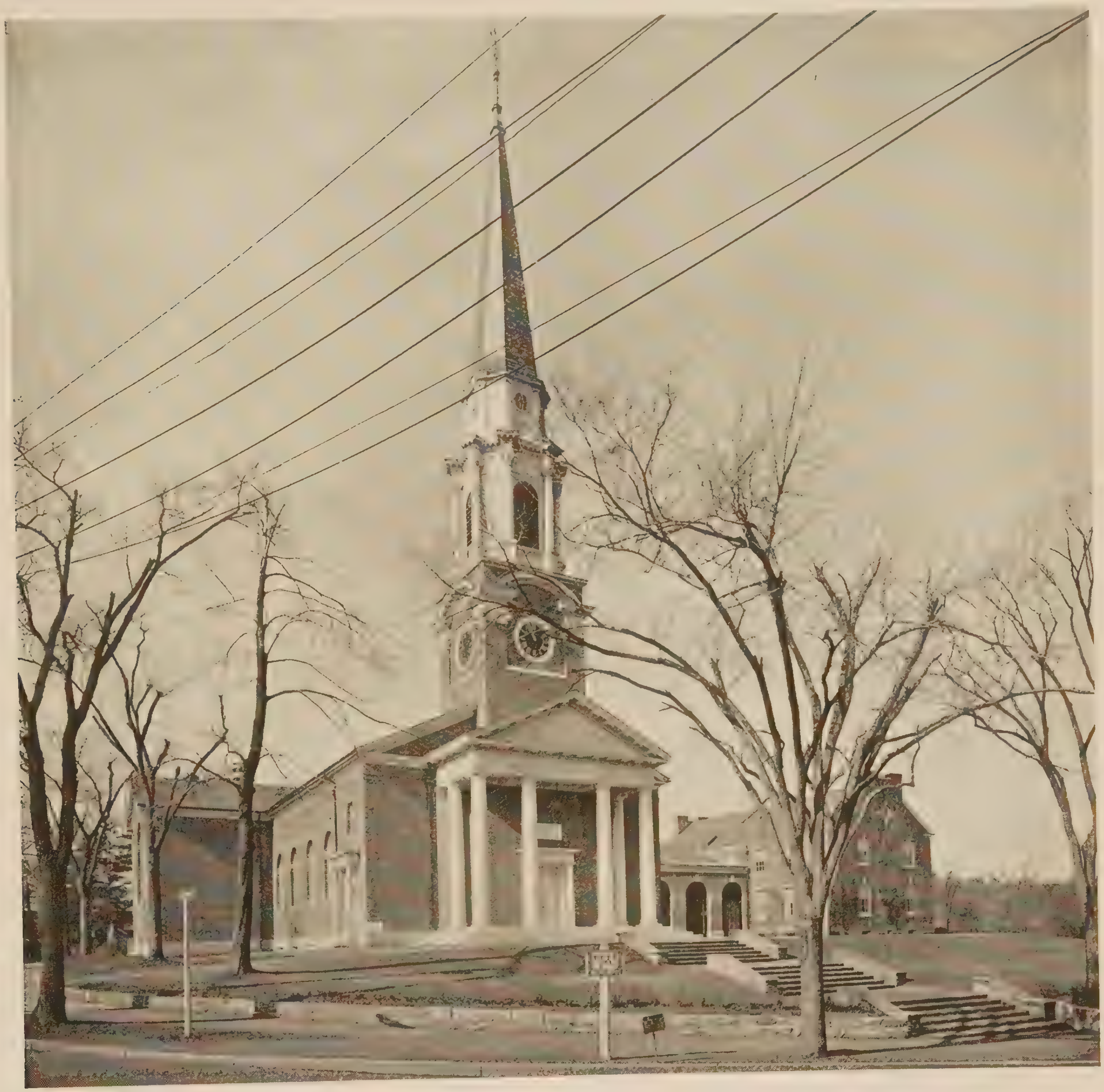
CHOIR AND SANCTUARY FROM CROSSING

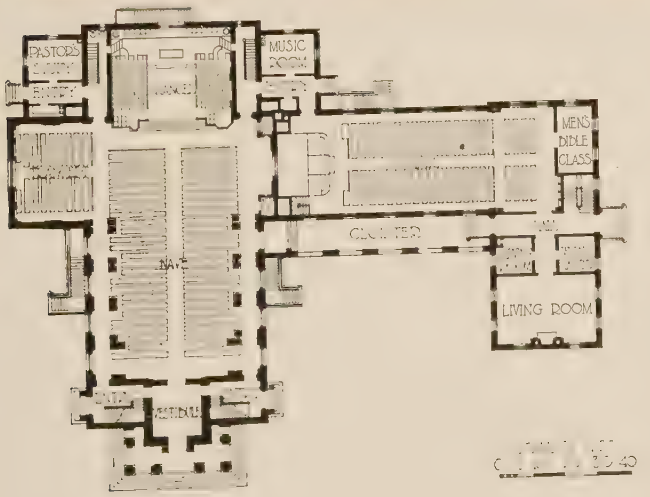


VIEW OF NAVE, CHOIR AND SANCTUARY

ALL SAINTS' CHURCH, PETERBORO, N. H.
CRAM & FERGUSON, ARCHITECTS

Photos. Paul J. Weber

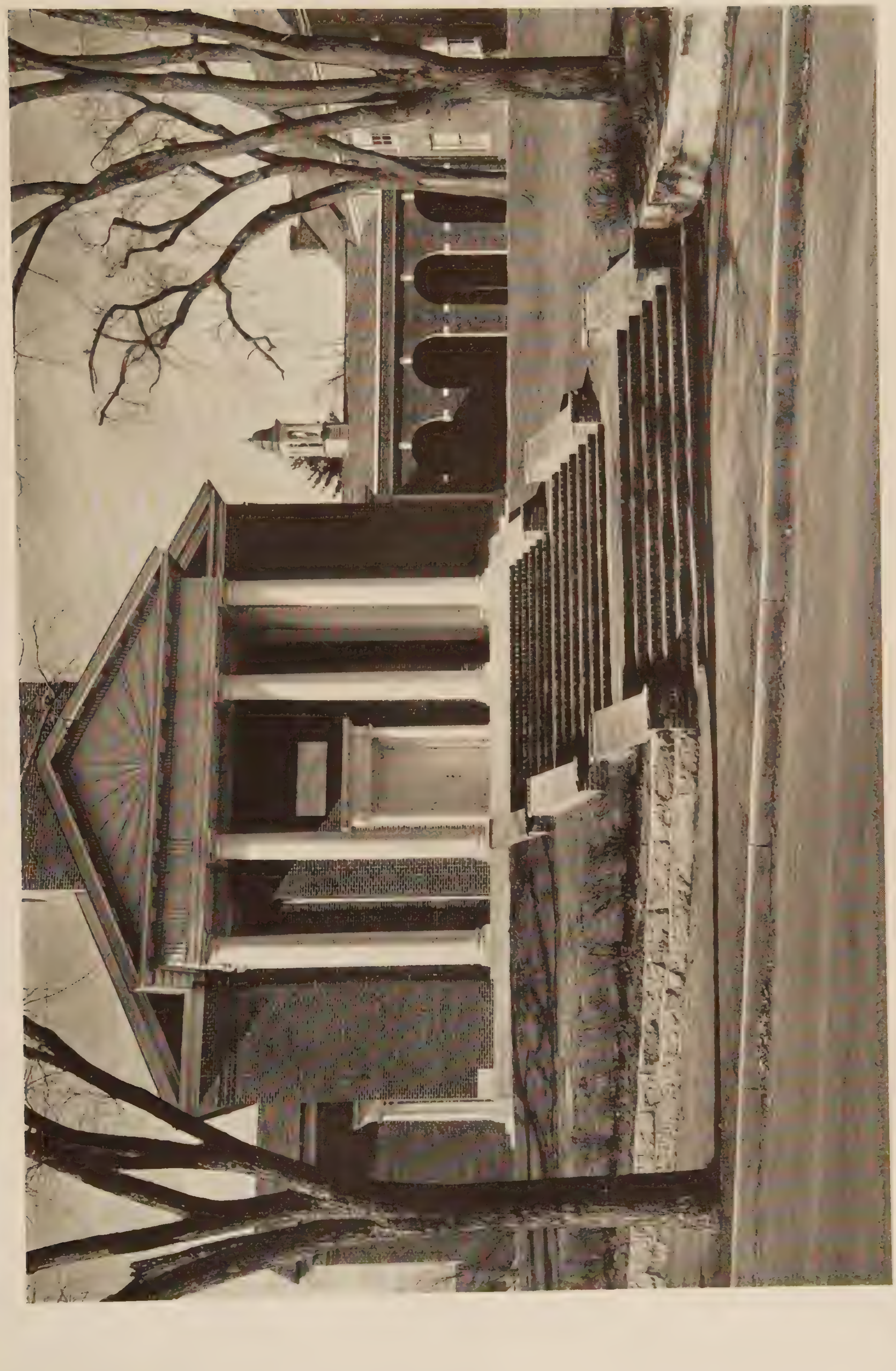




THE suitability of the "New England meeting-house" type of church building to the needs of a present-day congregation is well demonstrated here. While it possesses a distinctly ecclesiastical dignity and churchly character, it is at once apparent that the church is intended primarily to be an auditorium for preaching rather than a setting for a liturgical service. With this end in view the auditorium here has been so planned that no columns prevent any of the worshipers from seeing the pulpit and preacher. The organ and choir seats have been located close behind the pulpit which is always an aid in conducting services where much depends upon the personality of the minister and the quality of the choir.

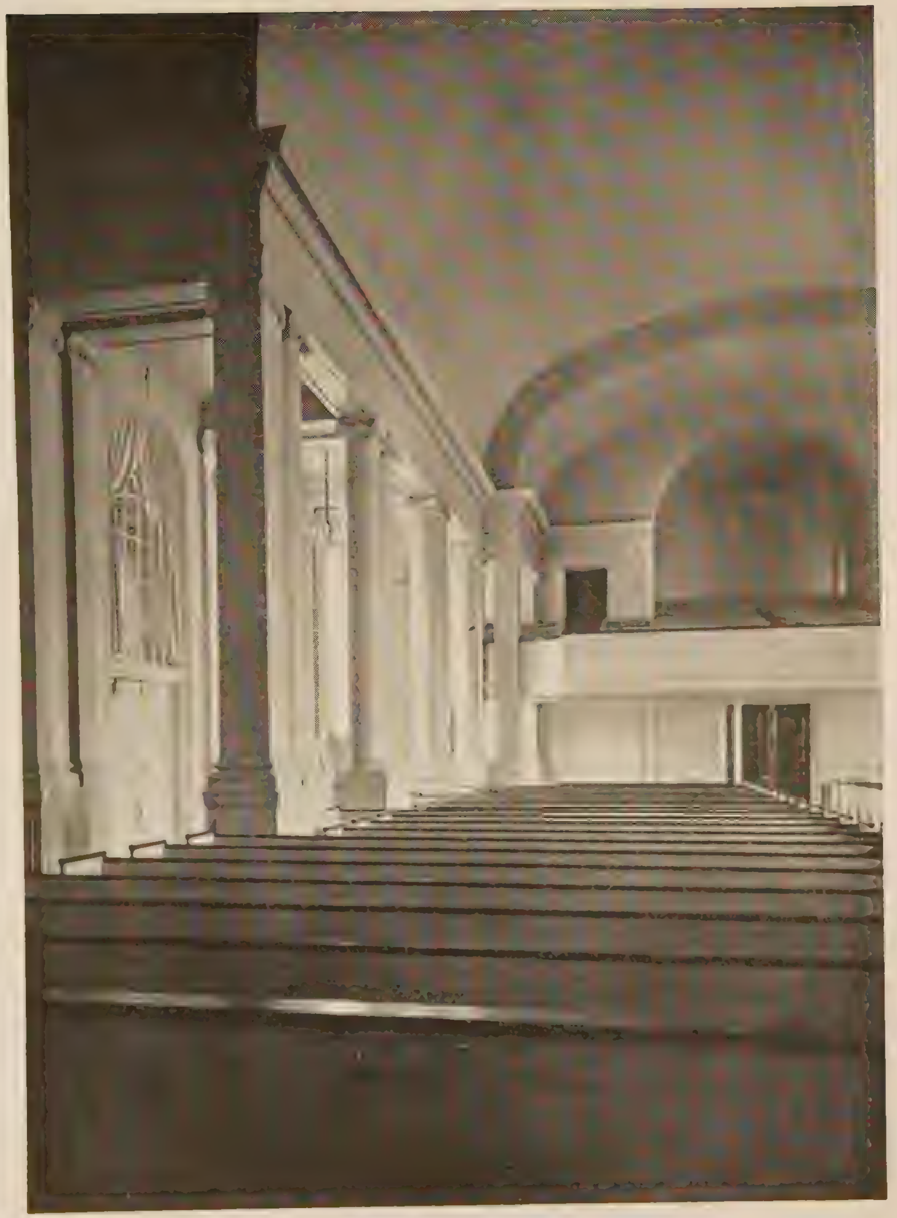
The exterior is rich in its restrained but graceful lines; the grouping of the various buildings is such as to enhance and emphasize the dignity of the church proper, and the materials, brick with stone sills and keystones, and wood trim, painted white, are those which, in addition to being the most appropriate for a building of this type, have the advantage of being comparatively inexpensive.

CONGREGATIONAL CHURCH, WELLESLEY, MASS.
CARRERE & HASTINGS, SHREVE & LAMB, ARCHITECTS

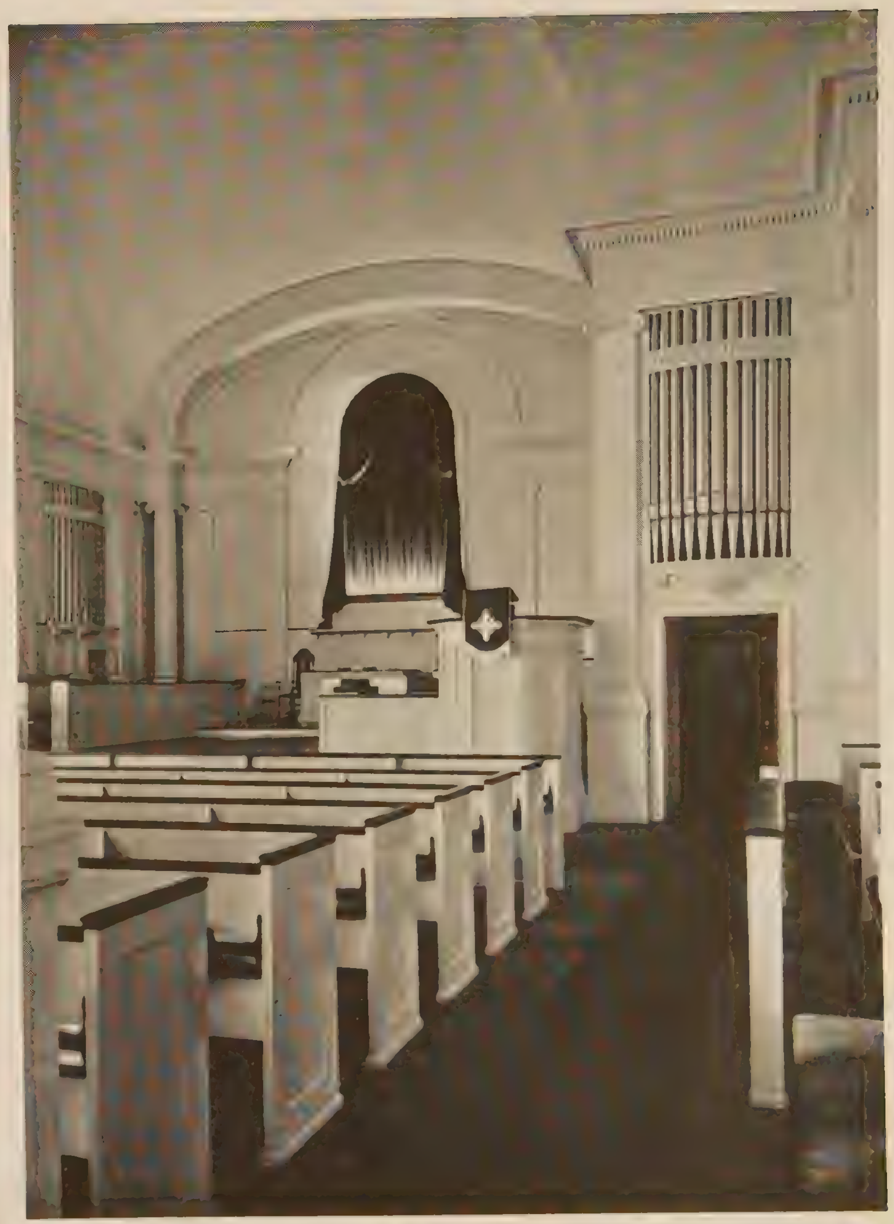


ENTRANCE PORTICO AND CLOISTER
CONGREGATIONAL CHURCH, WELLESLEY, MASS.
CARRERE & HASTINGS, SHREVE & LAMB, ARCHITECTS

Photos. Paul J. Weber



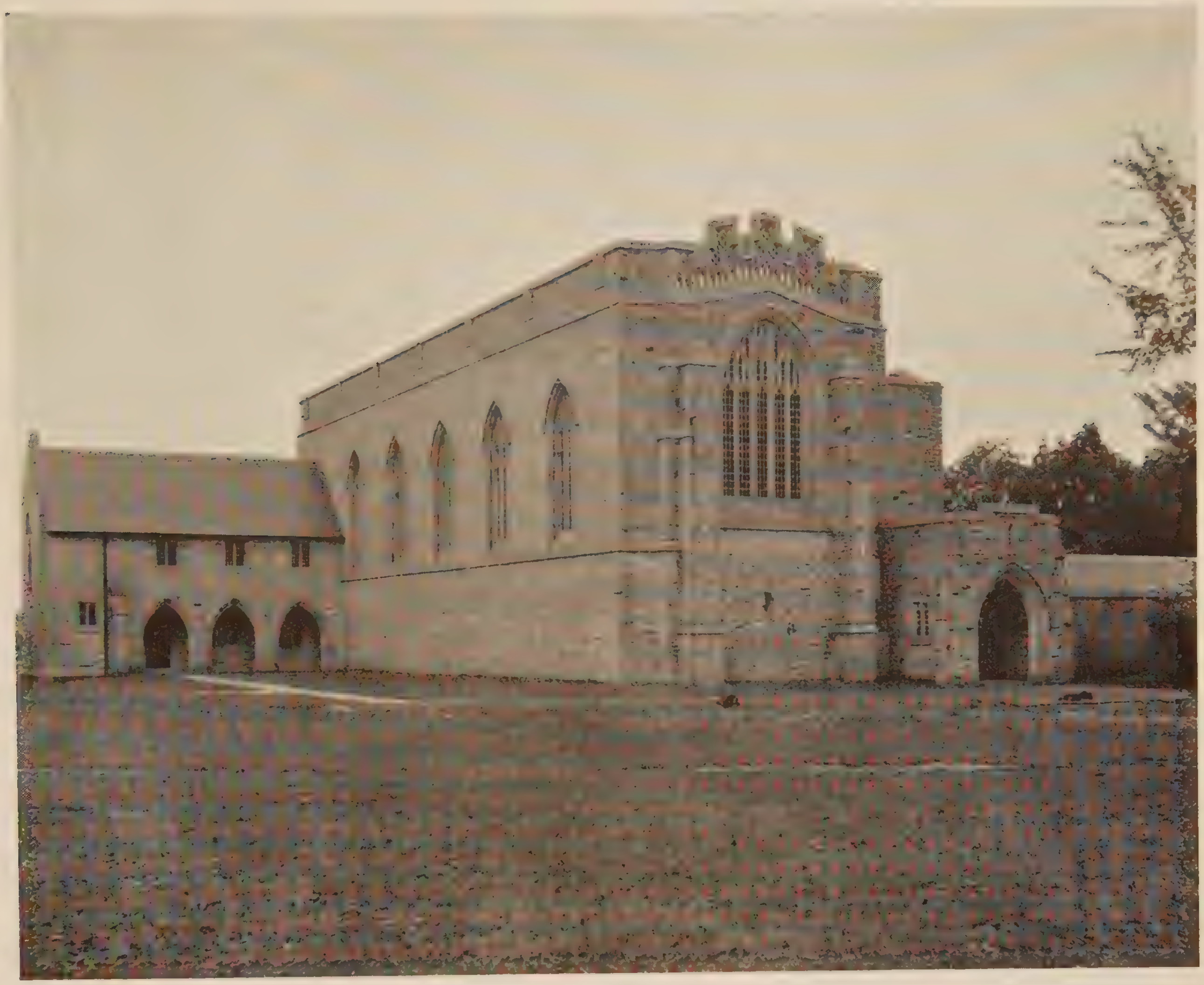
AUDITORIUM AS SEEN FROM CHOIR

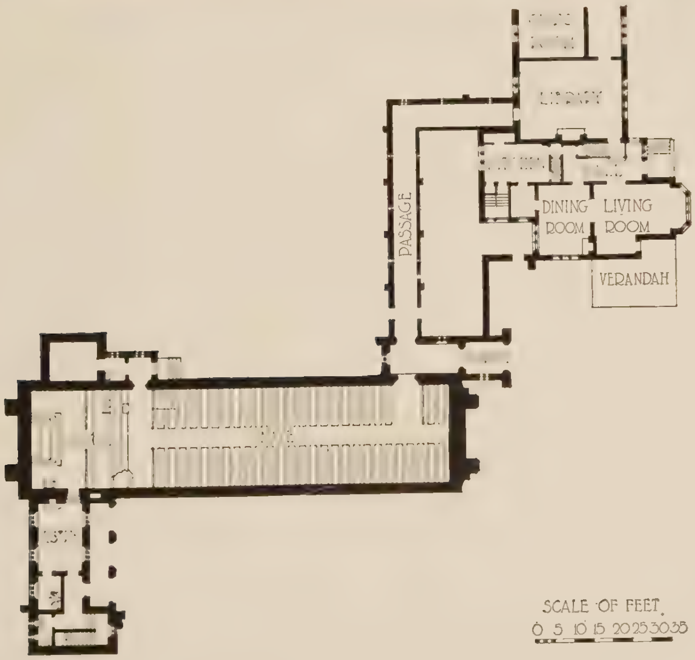


INTERIOR, LOOKING TOWARD PULPIT

CONGREGATIONAL CHURCH, WELLESLEY, MASS.

CARRERE & HASTINGS, SHREVE & LAMB, ARCHITECTS

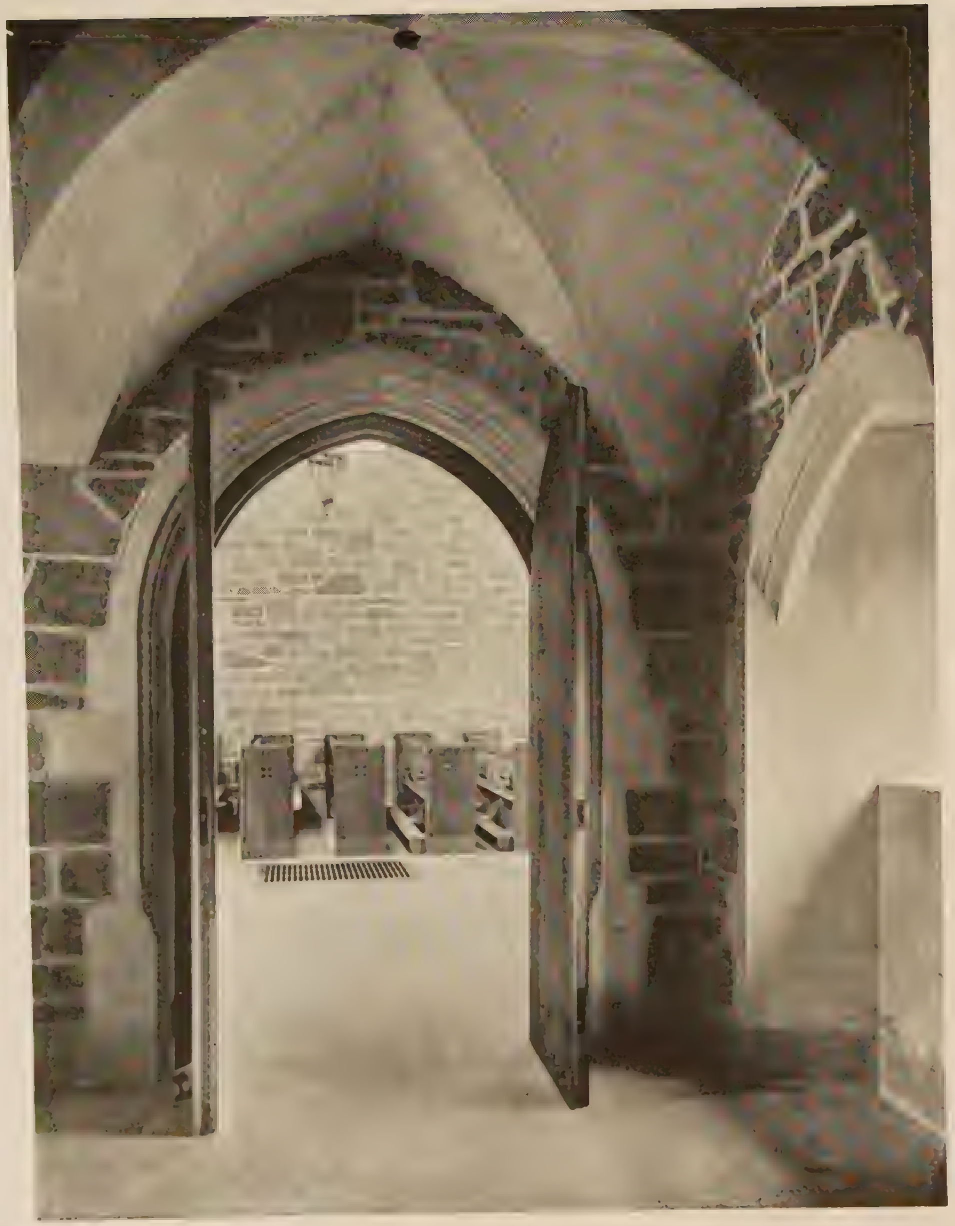




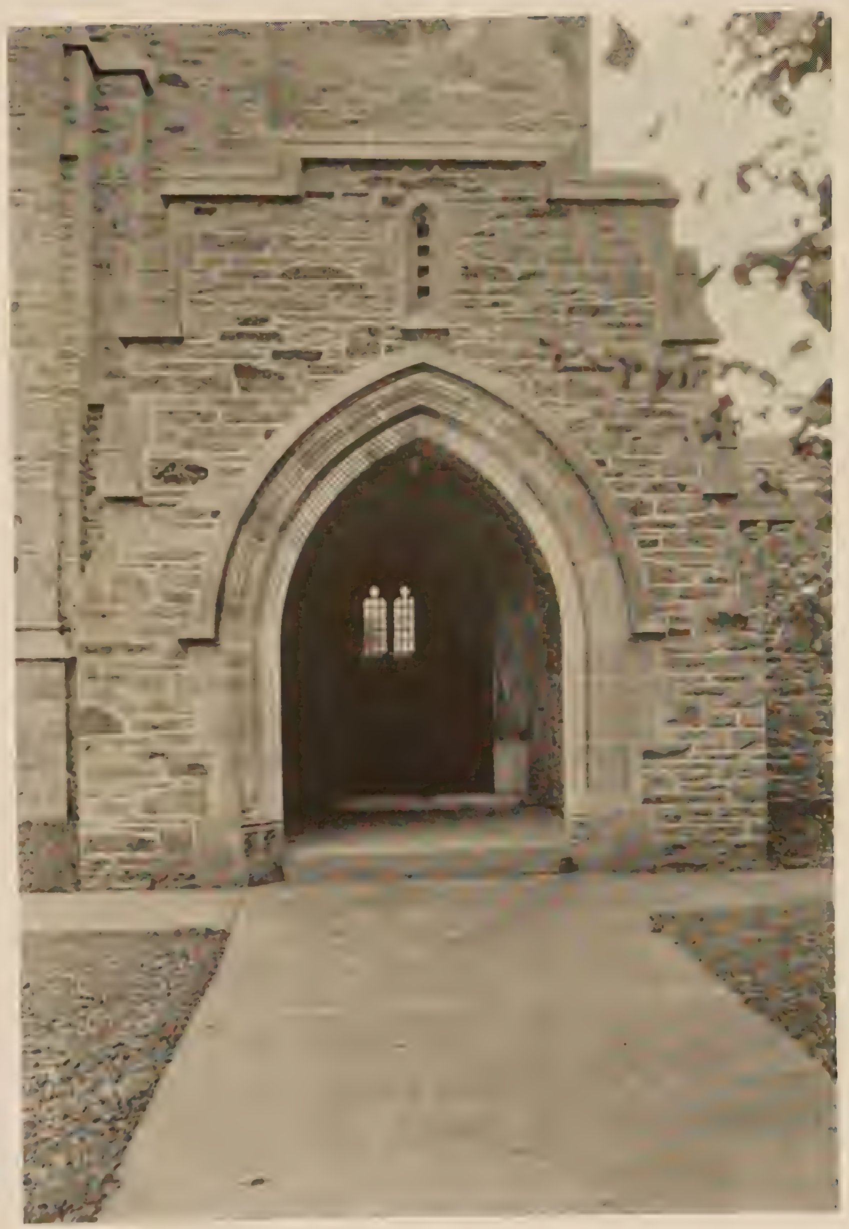
THE highly architectural dignity which characterizes this collegiate chapel group is due partly to its excellent design and the skillful placing of its different buildings, and partly to the use of materials which are appropriate for use in structures of this kind. Without and within the walls of the chapel are of a richly colored local stone laid up in ashlar, with cut stone used for jambs and sills of doors and windows, string courses and the tracery which fills various openings. Viewed from the entrance door by which the chapel is approached from the cloister the interior is impressive by reason of its length, its narrowness and its height, and by the placing of its windows high above the floor. The ceiling which is of heavy open timbers is supported upon corbels of stone. The roof timbers as well as the wood used for doors and for choir stalls, benches and other accessories are of oak with very little finish. The character of the entire interior with its stone walls and timbered roof is that of austere dignity, and it offers unusual opportunities for enrichment.

The various structures which compose this chapel group are admirably disposed in relation to the chapel proper which stands at the center, the long, low wing which contains the vestry and other departments being balanced upon the opposite side by the rectory and collegiate building which are joined to the chapel by the cloister.

MEMORIAL CHAPEL, BISHOP RIDLEY COLLEGE, ST. CATHERINE'S, ONT.
SPROATT & ROLPH, ARCHITECTS



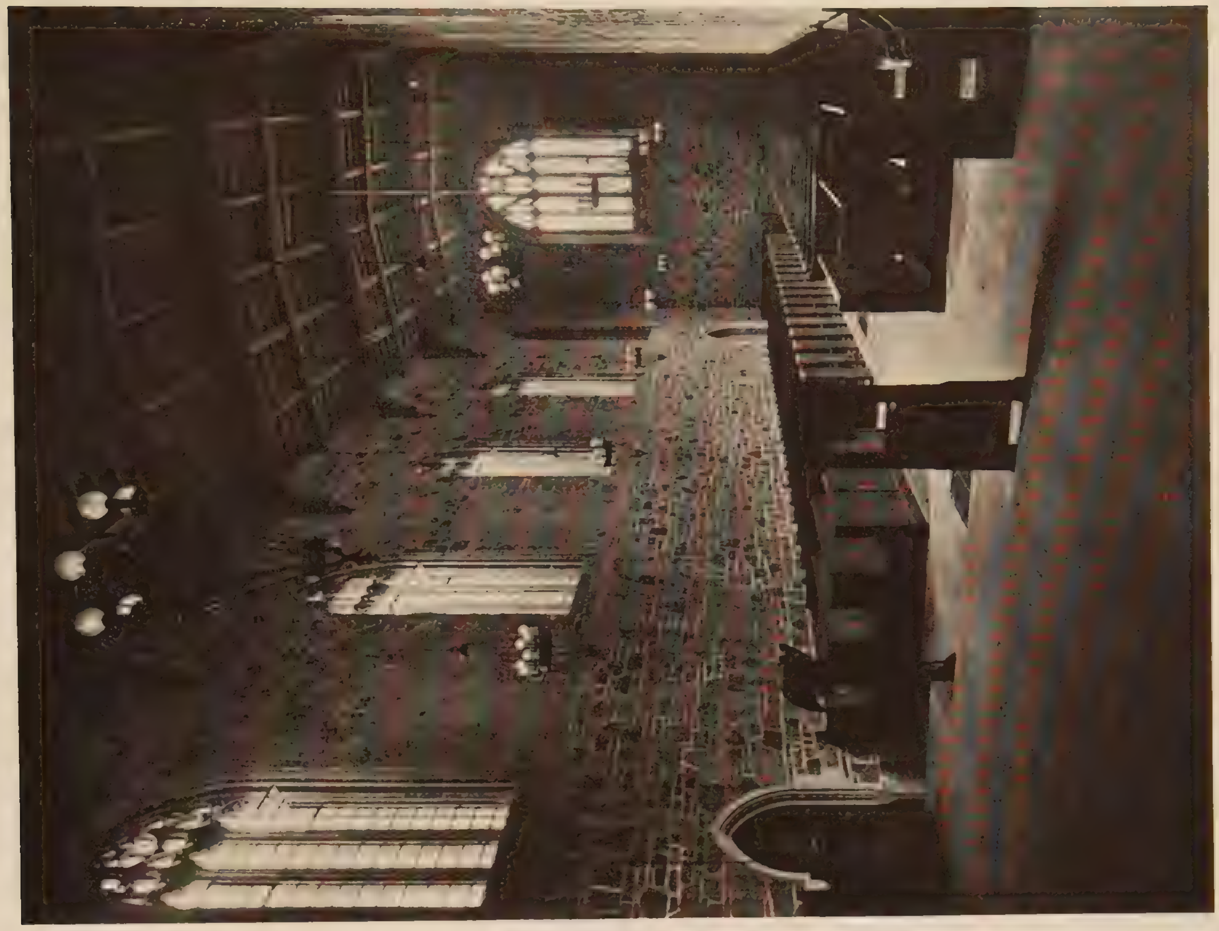
NAVE, SEEN FROM CLOISTER



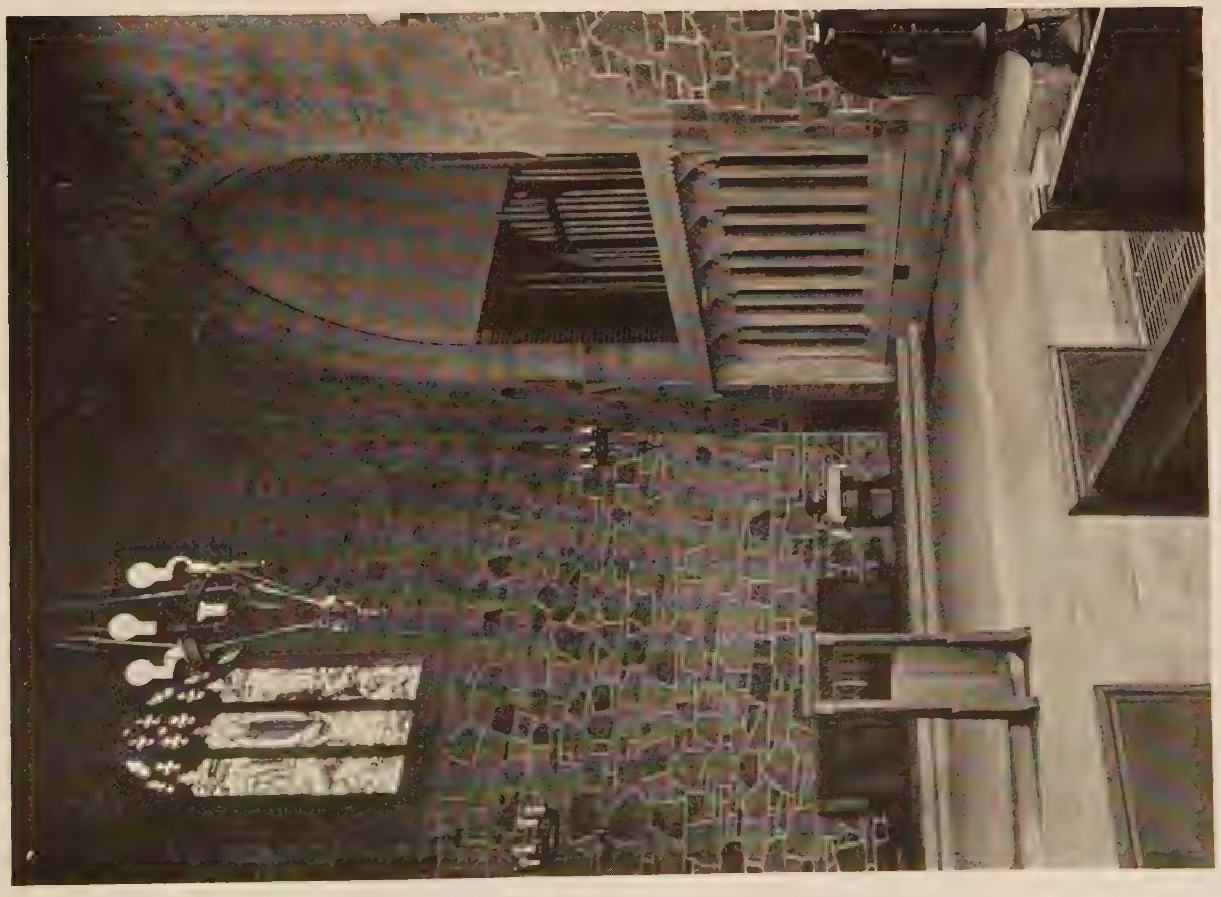
PORCH ENTRANCE TO CHAPEL

MEMORIAL CHAPEL, BISHOP RIDLEY COLLEGE, ST. CATHERINE'S, ONT.
SPROATT & ROLPH, ARCHITECTS

Photos Paul J. Weber



VIEW OF INTERIOR, LOOKING WEST



EAST END, CHOIR AND CHANCEL

MEMORIAL CHAPEL, BISHOP RIDLEY COLLEGE, ST. CATHERINE'S, ONT.

SPROATT & ROLPH, ARCHITECTS

The Small Church

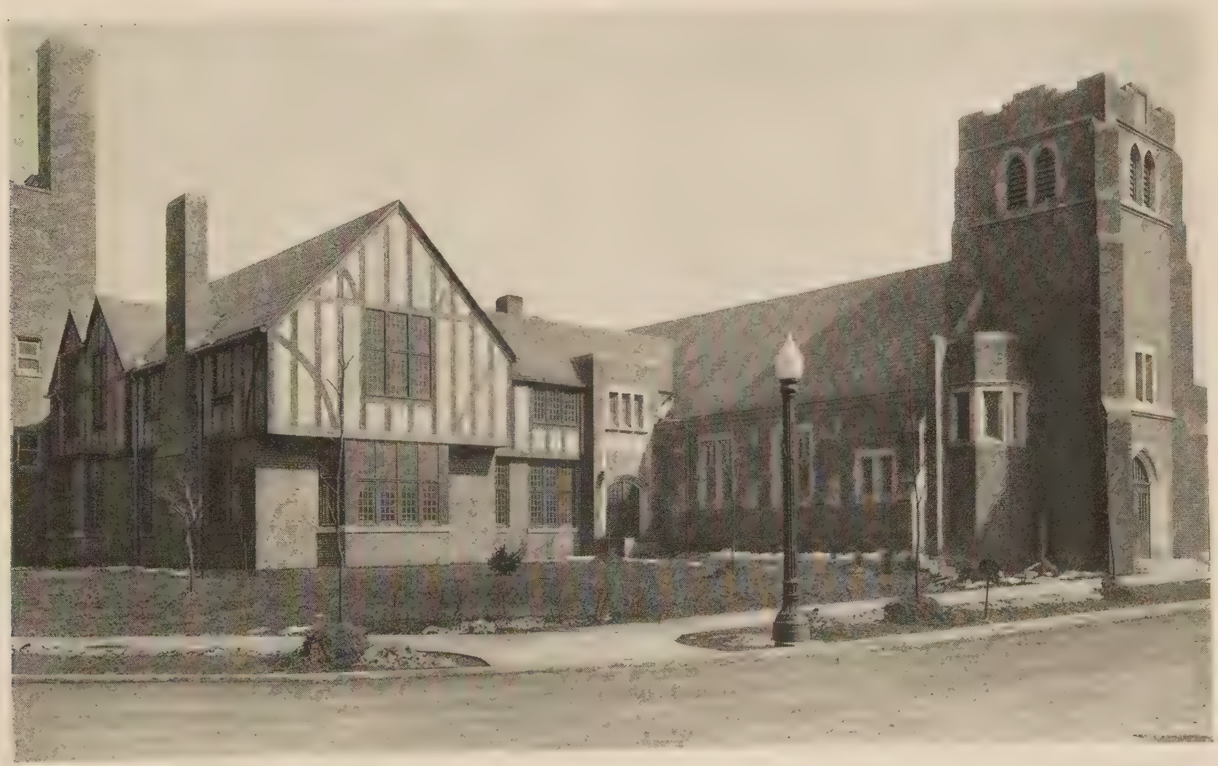
By ELMO CAMERON LOWE and FRANK G. DILLARD, *Architects*

QUITE naturally, the small church is a product of missionary activity. It might be well to say at the outset that such activity, for both urban and rural districts, is a subject of very intensive study by theological seminaries and denominational missionary boards. This study is bearing fruit in development of outlook in many regards. Even in villages and isolated rural sections, the church is becoming more and more a factor in community life. Its program is being extended to include the full cycle of interests of both young and old; its contact with human life is constant—week days as well as Sunday.

This attention to the small church problem has resulted in much conscientious investigation along the lines of housing and equipment, and many useful articles have been written within the past few years on this phase of the subject. A series of articles by E. Donald Robb, which appeared in the *Brickbuilder* for October and November, 1914, is highly inspirational.

There is no reason for the small church building, no matter how simple and inexpensive, to be built in poor taste or, as is so often the case, in positive violation of principles of proportion and common sense construction. The small church should be, first of all, *modest.* It surely must be the prayer of all lovers of order and propriety that we may soon see the passing of the small church that apes the more elaborate and costly structure. As Mr. Robb says, "We are all too familiar with the cheap and tawdry structures that masqueraded as churches during the period of artistic depression over which we have just passed, with their foolish wooden buttresses, pinnacles, galvanized iron crockets and contemptible ornaments of all kinds." After a rather expensive experience with the "common or garden variety" of present-day church builders, the writers are forced to the pessimistic and somewhat divergent view from that of Mr. Robb, that we have not yet entirely emerged from the "period of artistic depression." There are, however, indications that an increasing interest is being aroused within all communions on the subject of improving the standards of church building.

While the small church should be modest, it must not be cheap and flimsy. It must be purely functional in design, depending for its beauty on correct proportions, proper use of materials and effective ornamentation. Dignity should be the fundamental character of church design, and by careful attention to the factors just mentioned the small church building may be as dignified as the most noble cathedral. Because of the fact that they depend so largely on proportions, materials and restraint for their attractiveness, it is the opinion of the writers that the English village churches furnish the most suitable basis upon which to work. How divergent are the



First M. E. Church, Whiting, Ind.
Lowe & Bollenbacher, Architects

Auditorium, First M. E. Church, Whiting, Ind.
Lowe & Bollenbacher, Architects

examples of buildings falling within this classification; wonderfully fascinating little churches that accommodate but a handful of worshipers, and other churches of all degrees of size and fineness to structures that would please the richest congregations! In all of them, the chief charm is an honest and frank expression of construction and material. No shams—no covering up of "claptrap" construction anywhere. The village churches in some parts of continental Europe offer splendid examples for study; some especially attractive plastered buildings are to be found in Denmark. Wherever found, these structures are founded upon the same basic principles that make the small English churches so suitable for our inspiration.

Georgian and American Colonial types are very satisfactory, and in some sections may be more appropriate than the English. However, the tendency is so great in church buildings following these styles (judging from observation) to introduce cheap metal cornices and ornamentation, poorly designed stock columns and mouldings, and atrocities of belfries, that it seems almost unsafe to recommend them. The cost of upkeep of frame buildings is so high today that a great many congregations allow their buildings to fall into the sad state of deterioration so common throughout the country in this period of high costs.

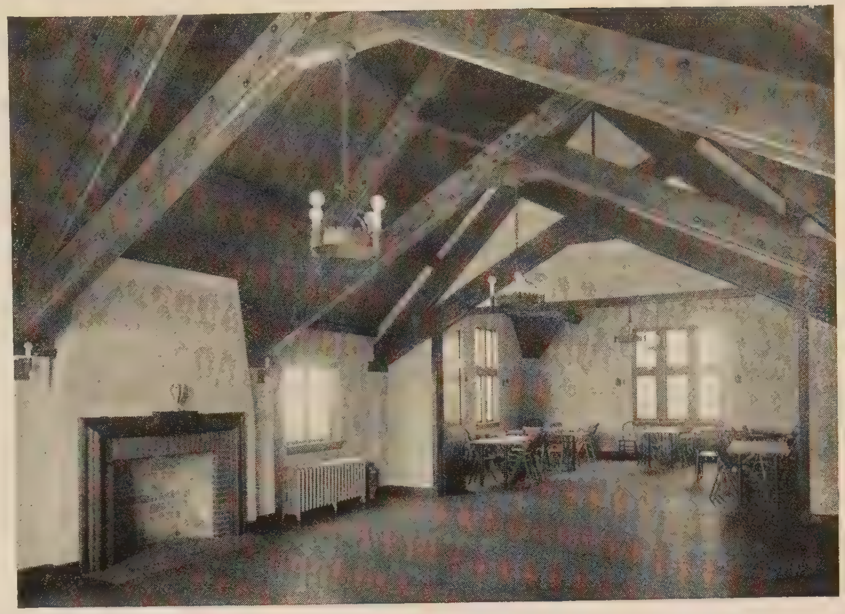
There has been a tendency toward the Classical or "library" type of church building, especially in the middle west. All that has been said, regarding both cheapness of material and insincerity of construction in pseudo-Colonial churches, usually applies with double force to this much abused type of small church building. There is the added objection to the flat roofed, box-like structures of this classification that they do not look like churches,—they create no impression of religious character in the mind of the average beholder.

There have been a number of small churches built of brick with very little stone trimming, that by the simple means of well proportioned openings, lowness of walls and steepness of roofs, are exceptionally attractive even though inexpensive. It is superfluous, in the face of what has been said regarding honest design, to introduce a word of condemnation of brick veneer construction, and our readers would not be offended by mention of it were it not that so many pastors and building committees have been misled into countenancing such construction by builders who have no regard for the principles that should always govern church building.

The practice of unintelligent copying is largely responsible for the terrible examples of church building to be seen on every hand. It is quite often due to a combination of incompetence on the part of the designer with ignorance on the part of the building committee. Church buildings above all other structures should be individual. Obviously this cannot be obtained by copying from some church that may have been seen by the committee in the adjoining village and to which they have taken a deep and unalterable fancy. The only course for a conscientious architect to take in such a case is to decline the commission, if his efforts at education are fruitless. The reason it may be safely assumed that such selection by the church leaders is poor is that at present (especially in the west and middle west) poor examples are sadly predominant. If our church buildings could be designed in the devoted spirit of English Gothic—even if not in detail—and if church building committees were wise enough to employ only such architects as really experience this spirit, we should within a short time see an improvement in church building.

In connection with church work, the intelligent architect has an opportunity—one might almost say obligation—of exercising his highest calling, that of developing an appreciation of the beautiful. Mr. Robb, in the article already referred to, sets a high aim for architects in this most appropriate way: "As art is the reflection of spiritual conditions, we cannot hope to properly establish a study of religious art without first producing those conditions which nourish and encourage its growth. . . . Art is one of the most potent factors at the command of the Church, and did she but know it, one of the strongest agencies in freeing the people from that spirit of commercialism and materialism which is her worst enemy at the present time."

The architect must fully understand the function



Sunday School Room, First M. E. Church, Whiting, Ind.
Lowe & Bollenbacher, Architects

of the church, and in full sympathy lead the congregation to paths of high aspiration. Ralph Adams Cram, in his "Church Building," tells us something of the devotional spirit that should actuate the church builder. Could anyone, after reading such an inspiring thesis, resort to cheap substitutes for permanency? On account of the very pressing need for economy in small church building, the most durable local building material should be selected, and the design of the structure largely developed from that starting point. When it can be secured reasonably in cost, stone is the most desirable material for walls. Frequently, in cases where the cost of stone seems prohibitive, an investigation of conditions will reveal possibilities for securing it at a cost within reach. An important church building was recently constructed with walls of beautiful ledge stone scrap from a distant slate mine, the cost of which was only the freight charges. In very small church buildings, the side walls can be kept quite low; a stone wall even to sill height with stuccoed tile above it can be made very effective.

Kiln-run red brick laid in uncolored mortar is the next choice for walls. Plain segmental or pointed segmental arches are effective in brick walls, and double reveals are sometimes advisable, especially where vertical lines should be emphasized. Gray slag brick is quite inexpensive in some sections and can be used quite effectively in certain types of buildings. Many recent small church buildings have been built with stucco finish over tile, concrete block and even wood frame. The use of stucco requires especially careful attention to the relation between wall surfaces and openings and to the texture of the finish.

No dependence should be placed upon applied ornamentation in small churches unless it be to use at some effective point a bit of stone carving that is of real artistic value. It has already been suggested that art in the small church must be expressed by structural integrity and good proportion. However, if the funds will permit it, a concentration of richness will be of great value—much more than tawdry, cheap ornamental details scattered about with a free hand. One important window, with well executed stone tracery, and all others in plain brick openings with brick sills is better than to have all of the windows in the customary more or less elaborate and expensive wood frames that pretend to imitate tracery. It is a form of hollow mockery.

Considerable study should be given to fenestration. A common fault of the kind of church buildings that are produced in wholesale lots is an absolute lack of scale between openings and wall surfaces. Almost always the windows are too large, and they are quite sure to be beautified (?) by the ugly wood frames already mentioned. There are now on the market several makes of steel casements that should be a boon to the designer of small, inexpensive churches. Single units are about 20 inches wide, which is as wide as single windows should be for the type of building we have in mind. These frames can be had without muntins if leaded glass is desired. In some types of building the standard size of panes will be in good scale. Sills should be at least 4 feet above the floor line. If the glass is to be leaded, a thoughtful architect will insist on the absolute simplicity of diamond or oblong quarries of delicately tinted cathedral glass, no matter how loudly the congregation may clamor for "art glass."

As just suggested regarding tracery, one especially prominent window of well designed glass will be very effective if it can be afforded. If steel windows with standard muntins are used, figured glass or light amber cathedral glass will be satisfactory in most types of small church buildings. All Sunday School and social rooms should have windows glazed with clear glass. Especially designed doors with suitably wrought iron hardware should be provided for the entrances.

The roof of the small church is an important feature. In the first place, it should be perfectly plain in construction and designed for its fundamental function of discharging rain and snow as effectively as possible. A pitch of about 50°, or somewhat steeper, will be found to be of value both for appearance and construction. Steep roofs are especially good if the building is without a basement and the walls consequently low. A roof that is thus made so important a part of the building should be covered with a good quality of slate of graduated or staggered thicknesses and variegated colors to insure good texture. This is an expense that will justify much economy elsewhere in the building.

Restraint should be exercised in designing the interior of the building as well as the outside, and the general principles suggested here should prevail throughout. Whatever elaboration of detail can be afforded should be centered in the chancel. Church floors should be sanitary, solid and noiseless. It is always desirable, from the standpoints of exterior appearance and accessibility, to have the auditorium floor only slightly above grade. When this is possible, the sub-floor can be of concrete laid on fill. For floors of this kind, slates, flagstones or tile are good materials for the aisles, and the spaces under the pews can be cement finished. Composition flooring, battleship linoleum or cork carpet over concrete or wood base will be satisfactory for more economical construction. Flooring in the chancel should be of better material than elsewhere in the building. Dark colors should be used pretty generally throughout. If the building has a narthex, it will be well to enrich its floors somewhat beyond that of the main floor of the church proper, possibly by using the material that is used for the aisles. All Sunday School and social rooms should have wood floors, stained dark and finished in harmony with the general character of the building.

Open construction of roofs is most desirable. It gives height to the interior and also truthfully shows construction. Very often the church committeemen will fear the use of exposed trusses because they may be aware of the high cost of casing the steel trusses of a church in some neighboring town; but it should be pointed out to them that solid wood trusses, in which the rough timbers are exposed and stained, can be built for as little outlay as would be required for casing all the members of complicated steel trusses. For the small church with a roof span of 25 or 30 feet, solid wooden trusses are very suitable. The plain "scissors" truss (especially for steep pitches) is comparatively inexpensive. Its members can be either solid beams joined carefully or built up of 2-inch boards with finishing boards over the under surfaces to conceal joints. There are for the small church builder many possibilities in the field of wood truss construction. We have seen some examples of wood and rod trusses that are quite pleasing and not very costly to construct. In trusses of this character, the usual long, level, lower chords can be relieved by bolsters and brackets. In some of the best recent types of small rural church building, the ceiling is plastered on scissors trussed rafters with collar beams and knee braces arranged so that the faces of the ceiling with the side walls form, in section, half of an irregular dodecagon, side windows penetrating the lowest sloping surfaces.

In buildings such as we have under consideration, and even in larger churches, side walls can be very simple indeed. Lime plaster is best for acoustics. We would suggest that jambs and heads of window openings be plastered with the surfaces splayed. By this method considerable expense can be avoided on account of the omission of the wood trim. In some types of rooms for worship a wood wainscot to the height of the sills will be very satisfactory. Such wainscoting may be made of matched and "V" jointed boards of uniform or alternating widths, stained a dark weathered wood color.

If any enrichment can be afforded in painted ornamentation, it should be confined to the chancel. Wall decoration in most small churches will necessarily be plain, and unless such enrichments can be of high artistic quality they should be confined to modest stenciled borders or omitted entirely. A rich border, introducing bright colors, can properly be carried around the chancel arch. Bright colors can also be used with great effect on roof members, but such treatment should be carefully studied.

The simple oblong room, which was considered to be the best plan for the little Gothic churches of England, has never been improved upon. Today our most successful small churches are of this type of plan. A great advantage is gained in the simple dignity and also in reduced cost. What a contrast in repose there is between a church of this kind and the very common type in which the interior is square, with pulpit in one corner, entrance in the opposite corner and the sides full of barbaric windows of gigantic scale, penetrating the sloping ceiling in all kinds of disorderly intersections!

If there is to be provision for emergency seating space, this can be taken care of by a small gallery over the narthex, and perhaps transepts, one of which can be shallow and used for the choir, the other larger to serve, in addition to seating space, for a prayer meeting room or chapel. If the church can afford to build an aisle on one side, this space can also be used for extra chair seats. The Sunday School and social needs of the church and community must be provided for in a closely related annex,—preferably a wing. The actual cost and prospective needs along these lines should be carefully considered in the light of modern religious educational programs.

The reader will have noted before this that we have endeavored herein to reduce this proposition of church building to the financial ability of poor congregations, presumably of non-liturgical denominations; there are so many of them throughout the land, and they deserve better treatment than is usually accorded them, even though it may at first be hard to get them to accept the treatment. Architects of ability should help such congregations to do right in building, even if it means sacrificing regular fees. This is not advocacy of doing church work for nothing (the architect must be his own judge in that regard); it is rather an attempt to stimulate an effort toward correcting the common practice of poor churches, that is of building from drawings made with no thought of the fitness of things.

Sunday School Requirements

By HENRY EDWARD TRALLE

CHURCH architects today are confronted, at the very threshold of their planning, with an educational and an ecclesiastical problem.

Church House and Schoolhouse. A church house today implies also a schoolhouse, and a schoolhouse in connection with a church house must mean exactly what schoolhouse means anywhere else—a building adapted to educational uses. This schoolhouse, therefore, must be a building complete in itself, and must be used only for distinctively educational purposes. It cannot be a mere space in a church auditorium, or a mere enlargement of such an auditorium with a movable partition on the side toward the pulpit for partial separation. Nor can it be a basement room that is used also for social purposes. To put a Sunday school or any part of it into a basement room is an abasement of religious education. Nobody would think of putting any other kind of school into a basement, and why should the Sunday school, of all schools, be thus mistreated?

The church, of course, should have a recreation room, but even this room should not be in a basement, and, wherever it is located, it cannot be effectively adapted to educational uses. This recreation room can be used for social functions, entertainments, games, and even as a dining room, but not as an educational room.

The church school is developing an educational consciousness, and is realizing as never before that a school, whether it be called Sunday school, Sabbath school, Bible school, or church school, implies a schoolhouse and school equipment. The Sunday school at the beginning was allowed to come into the church on sufferance, and to occupy a corner of the church auditorium. Then, as it grew, a room was built for it on one side of the church auditorium, with a movable partition between, so it could be used also as an enlargement of the auditorium on occasion. This added space was not a good room for a school, and it had the same effect upon the appearance of the auditorium that a good-sized wart would have on the side of a woman's face—but it got the Sunday school off the carpet in the auditorium, and saved the sanctity of the sanctuary!

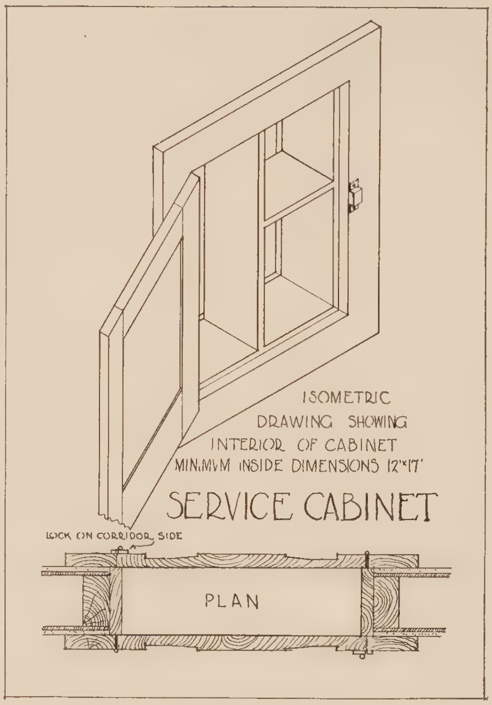
The next step in building for the Sunday school was the placing of irregularly shaped classrooms around two or three sides of this added room, each room separated from the other rooms only by thin movable partitions, open in front, or else with curtains. Sometimes this added Sunday school room was semi-circular in form, with two tiers of partial rooms or stalls around the semi-circle, one above the other, and a high ceiling for the rest of the large room. This two-deck "side-wheeler" was designed for the old fashioned one-lesson, one-assembly Sunday school, and belongs now to the educational museum, since the Sunday school has developed into a departmental, graded institution, demanding for itself a complete schoolhouse, with assembly rooms and classrooms.

Spaces and Proportions. This schoolhouse needs to be large enough to care for the school of the church in departments and classes, allowing 15 square feet of floor space per individual pupil. A school with 600 pupils, for example, will require 9,000 square feet of floor area for assembly room and classroom uses. An allowance of 16 square feet of floor space per individual pupil is liberal, and is considered by some to be preferable, while, on the other hand, an allowance of only 14 square feet of floor space per individual makes good educational work possible. These statements regarding floor space requirements are made on the basis of many measurements and observations and comparisons, and may therefore be accepted as a working basis in planning the schoolhouse of the church. Additional spaces, of course, must be provided for corridors, stairways, toilets, offices, etc., as these are not included in the provision of 15 square feet of floor space per individual, though the 15 square feet may include the spaces occupied by partitions between rooms.

In general, it may be said that the average church will need to provide, in its schoolhouse, for approximately the same number of individuals that its church auditorium will seat, and since about double the floor space per individual is required in the schoolhouse as is required in the auditorium, this means that about the same amount of ground area is required for the schoolhouse as is used for the auditorium, inasmuch as the schoolhouse is usually a two-story building, though it may be only one story high where there is an abundance of ground space, and it may be even seven stories where ground space is limited, provided elevator facilities are afforded.

This general statement regarding the total of ground space and floor space required for the educational work of the church presupposes that the church auditorium will be also the general assembly room for the Sunday school for its occasional meeting as a whole or, less preferably, that the recreation room will be used for this purpose, as it is considered that the occasional assembly of the whole Sunday school in the church auditorium is in itself good religious education, aside from the material saving in construction costs. When a church erects a second auditorium large enough to accommodate its school as a whole, "the Sunday school room," it is duplicating in effect what it already has in its church auditorium, and this cannot often be done.

The total floor space in the schoolhouse of the



Suggestion for Receptacle for Records

church should be suitably apportioned to the several departments of the school. The proportions, for the average school, will be about these: Cradle Roll and Beginners, ages from about 3 to 5, 10 per cent; Primary, ages 6 to 8, 10 per cent; Junior, 9 to 11, 10 per cent; Intermediate, 12 to 14, 10 per cent; Senior, 15 to 17, 10 per cent; Young People, 18 to 23, 20 per cent; Adult, 24 and over, 30 per cent. This means that for a school of 600, for example, with a total of 9,000 square feet of floor space for educational uses, 900 square feet will be assigned to each of the first five departments named, 1,800 square feet to the Young People, and 2,700 square feet to the Adults. If the adults use the church auditorium or the recreation room for assembly, or if the adults hold no assembly for the adult department as a whole, as is frequently the case, then it is not necessary, of course, to provide an adult assembly room at all. In this case, in building for a school of 600 pupils, there will be left of the total of 9,000 square feet of floor space, after providing for all the departments, sufficient space probably for corridors, toilets and the other needed facilities. The heights of assembly rooms and classrooms in the schoolhouse will vary from 8 to 12 feet, according to the size of the school and of the assembly rooms, and the average ceiling will be about 10 feet in height.

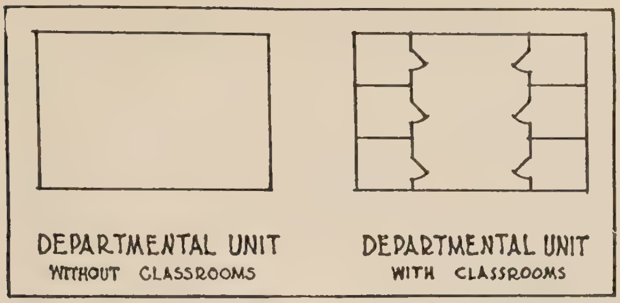
The proportionate sizes of the departments in the Sunday school will vary greatly, as a matter of course, in different localities, and the approximate average proportions as given here are useful only as a basis of comparison in planning. The architect, however, should be on his guard against planning in accordance with present existing proportions in any given school, as these proportions may be materially changed with a new building and suitable equipment. The present number of Intermediates, for example, may be relatively small on account of lack of adequate departmental provision, and might easily be doubled within a year in the new schoolhouse. The same might be true of some other department. Furthermore, in general, provision should be made for the growth of the school, except in the exceptional community where it seems to be evident that no considerable increase in attendance can be expected, even with improved facilities.

As to the location of the church schoolhouse in relation to the church auditorium and the recreational room, no hard and fast rule can be laid down. It depends on the size and shape and slope and surroundings of the church lot. The schoolhouse may be under the same roof with the church auditorium, or under a separate roof, but the two buildings should be close to each other, with easy intercommunication, and with at least one solid, soundproof wall separating the one from the other.

Assembly Rooms and Classrooms. A schoolhouse is not a schoolhouse unless it contains classrooms, one for each class; and a classroom is not a classroom unless it has soundproof walls and actual doors opening into a larger assembly room or a corridor. Every teacher needs for his class alone a room with four soundproof walls, for the common sense reason that all sights and sounds coming from any source other than from his own particular group are of necessity in the nature of distractions and make impossible his best teaching. Any teacher can do far more effective teaching with his class alone in an individual classroom than in the midst of hubbub where there are seven or seventeen classes being taught at the same time in the same room. This truth holds with the classes of younger children as well as with the classes of older pupils. If the children in the Beginners Department are divided into classes for a part of the school session, then each class needs its own small room—for the same reasons that the department as a whole needs its own separate assembly room for its distinctive departmental work. The superintendent of the department needs an assembly room in order to handle effectively the whole department as a unit, and, for the same reasons, each teacher needs a classroom in order to handle effectively her class as a unit. Indeed, the younger the children the more they are influenced by their material surroundings, and the greater the necessity therefore for classrooms as well as assembly rooms.

Sizes and Proportions of Rooms. The floor space of each departmental unit should be divided between assembly room and classrooms in the proportion of seven to eight, each pupil being allowed 7 square feet of space in the assembly room and 8 square feet in the classroom. The allowance of 7 square feet in assembly room provides also for aisle, piano and partition spaces, and the 8 square feet in the classroom includes the space needed for partitions.

In a school of 500 or 600, the Beginners will require four small classrooms, about 8 by 10 feet each, in addition to the assembly room. In the Primary department there will be needed six class-



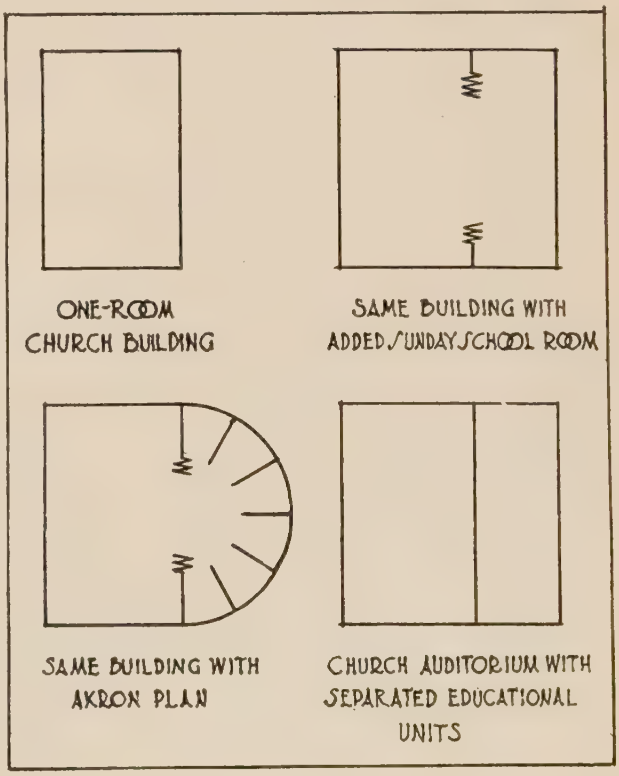
rooms, about 8 or 9 by 10 feet, in addition to the assembly room. There should be a Cradle Roll room and a Mothers' room, both near the Beginners and Primary units, but with no direct connection with either. In a school of the same size there will be needed six classrooms in the Junior department, six in the Intermediate department, and six in the Senior department. In each of these departments it is advisable to have the classroom a little larger than in the Beginners and Primary departments, and to make the assembly room proportions a little smaller if necessary. For the Young People there will be needed at least four classrooms, which should be considerably larger than the classrooms in the departments already mentioned. At least four adult classrooms will be needed. The largest adult classroom should be on the first floor if possible, easily accessible from the street, and it might be used for various other purposes—prayer meeting, missionary meetings, conferences, social functions, etc. It is advisable, usually, to have the younger children on the first floor, though this is not absolutely necessary. In planning for a small school, each departmental unit may be divided into three rooms, one room larger than either of the other two, to be used as an assembly room and also as a classroom.

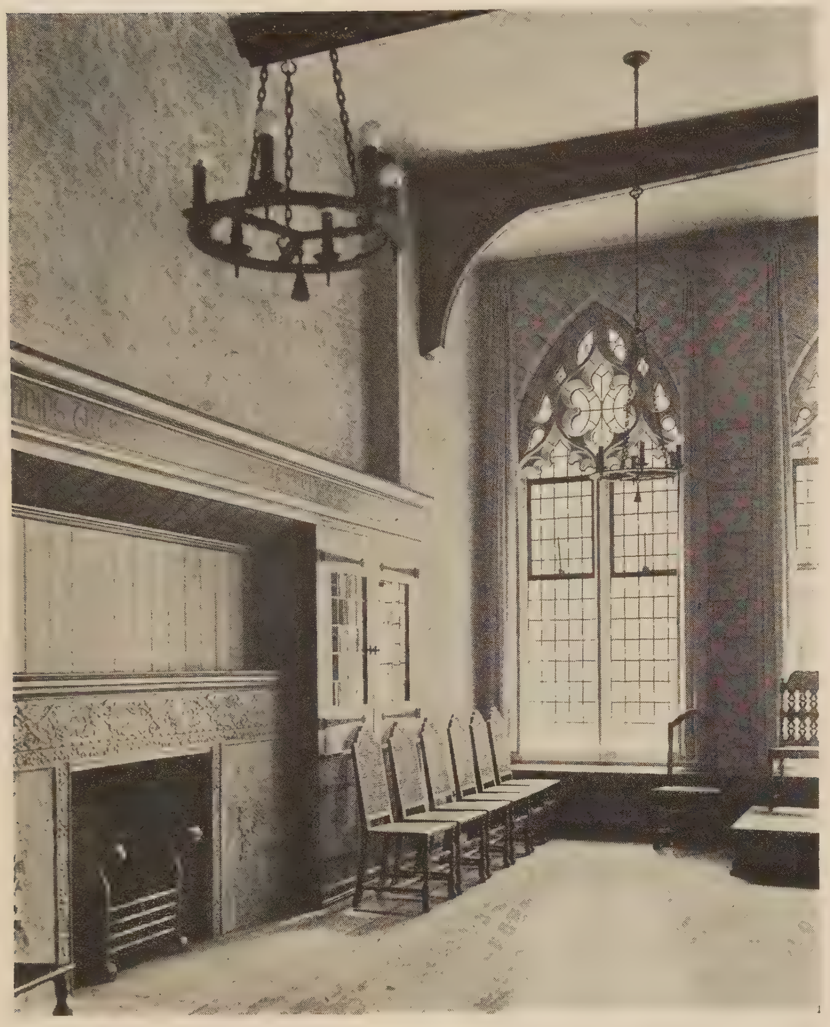
It should be kept in mind that the requirement of 15 square feet of floor space for each individual holds even where there are no classrooms, when all the classes of a department are handled in the one large room, the members of each class being seated around a table. In this case there must be left, between class and class, room for the free movement of the workers, and there must also be sufficient floor space between classes to make possible a fair degree of removal of class noises from class noises.

In other words, the addition of six classrooms in a Junior department of 60 members, for instance, does not increase the total floor space of 900 square feet, but only effects a better utilization of the space, and therefore makes the cost of classrooms less than the small cost of the separating partitions, for the reason that these partitions save practically their own cost, because their presence lessens the dimensions otherwise necessary for floor and ceiling girders and beams to span a larger one-room space. When this type of construction, with assembly room and classrooms, is compared with the obsolete "Akron" combination of high room with two tiers of "stalls," its cost is materially less, for the reason that it utilizes the upper half of the space that is obviously wasted in the other type of construction.

Of course, it never should be permitted that an argument for economy prevail when the educational interests of childhood and youth are at stake, but frequently I have been compelled to resort to it in order to get a church building committee to adopt classrooms. When I assumed the initiative in advocacy of separate classrooms with permanent partitions, in the church schoolhouse, beginning in 1906, in connection with my educational work, I invariably met the objection that the idea was an ideal that was impossible of attainment, because of the prohibitive additional cost of classrooms. In seeking to meet this objection I discovered, in 1910, that it was possible to have classrooms, in addition to assembly rooms, without increase of floor area, and with practically no additional cost, and, since that time, I have demonstrated this fact in various buildings in different sections of the country, and have advocated in my writings and in my addresses in 34 states of the union and with classes in schools, classrooms with permanent partitions and hinged doors for all the classes in the Sunday school. Both the advisability and the practicability of such rooms now are quite generally accepted by the church leaders in practically all the denominations, though there are church committees here and there that still need to be convinced.

Various Other Provisions. It is advisable usually, for various reasons, to depend on natural ventilation in the schoolhouse of the church. It is desirable, therefore, that each classroom have at least one outside window, and that each assembly room have at least two outside windows. It is necessary, sometimes, in order to secure outside light for the class-





Assembly Room, New York Bible Society Building
Wilfred E. Anthony, Architect

rooms, to locate them so that each will open into a corridor, instead of immediately into the assembly room. Proper ventilation will be greatly facilitated if each window is provided with a transom, opening from the top inward, with regulating attachment making adjustment possible. This arrangement will give ventilation without drafts. The windows themselves, of course, should be made to raise and lower. Pupils may be protected from drafts from the bottoms of windows by sloping glass shields. All inside classroom doors and assembly room doors should have transoms, for ventilation. Good ventilation is a prime requisite for successful work.

All classrooms and assembly rooms should be well lighted from the outside wherever it is at all possible. The light should be diffused as far as practicable, and should come from the rear and sides of each room. Obscured glass is preferable to clear glass, since it aids in the diffusion of the light and also increases the effect of separateness and of coziness within the room. Glare should be eliminated by means of double shades on rollers.

Care should be taken to provide adequate corridors and stairways. All connections should be as direct and easy as possible. Offices and library rooms will be needed in the schoolhouse of the church. Adequate and convenient toilet facilities should be provided, particularly for the lower grades. For the Beginners department, there should be provided a cabinet for supplies and a room for wraps. The same provision is needed for the Primary department. The room for wraps should be so constructed as not to interfere with the symmetry and beauty of the assembly room, or of any classroom. Above the Primary department, each classroom should have its own provision for wraps and for supplies. Usually it is advisable to provide such facilities at one end of the classroom. Each classroom should be provided with a receptacle in the partition for its records and offering, with a small door opening inside and another opening outside, for the lessening of classroom interruptions. It is advisable for each classroom door to have in it a glazed slit, to facilitate inspection by officers and visitors without interruption of class activities.

Each classroom should have a small blackboard, to be used by the teacher principally and occasionally by a student. This blackboard should be placed as inconspicuously as possible. If built in, it should be covered with a curtain when not in use, or preferably by doors or panels. Some teachers prefer a lightweight portable blackboard. In every classroom there should be a few well selected, graded pictures. All pupils should be seated comfortably and conveniently, using chairs which should correspond in finish with the finish of the room and be in harmony with its color scheme. Student chairs, with tablearms for writing, are desirable for all classes above the primary grades.

All classrooms and assembly rooms in their interior finish and trim should express the best in ideals and practice, and the color schemes and decorations should be such as will develop in the pupils a sense of comfort and well-being, as an aid in religious education. In rooms having an abundance of direct sunlight, the cooler tints of green, blue-green, light blue, and gray should prevail. In rooms with less light, the warmer tints of yellow, or orange-yellow, should prevail. The stronger tones of blue and of red should be avoided, because such colors are trying to the eye and promote restlessness on the part of the pupils.

Stained Glass Construction and Details—II

By WILBUR HERBERT BURNHAM, *Artist-Craftsman*

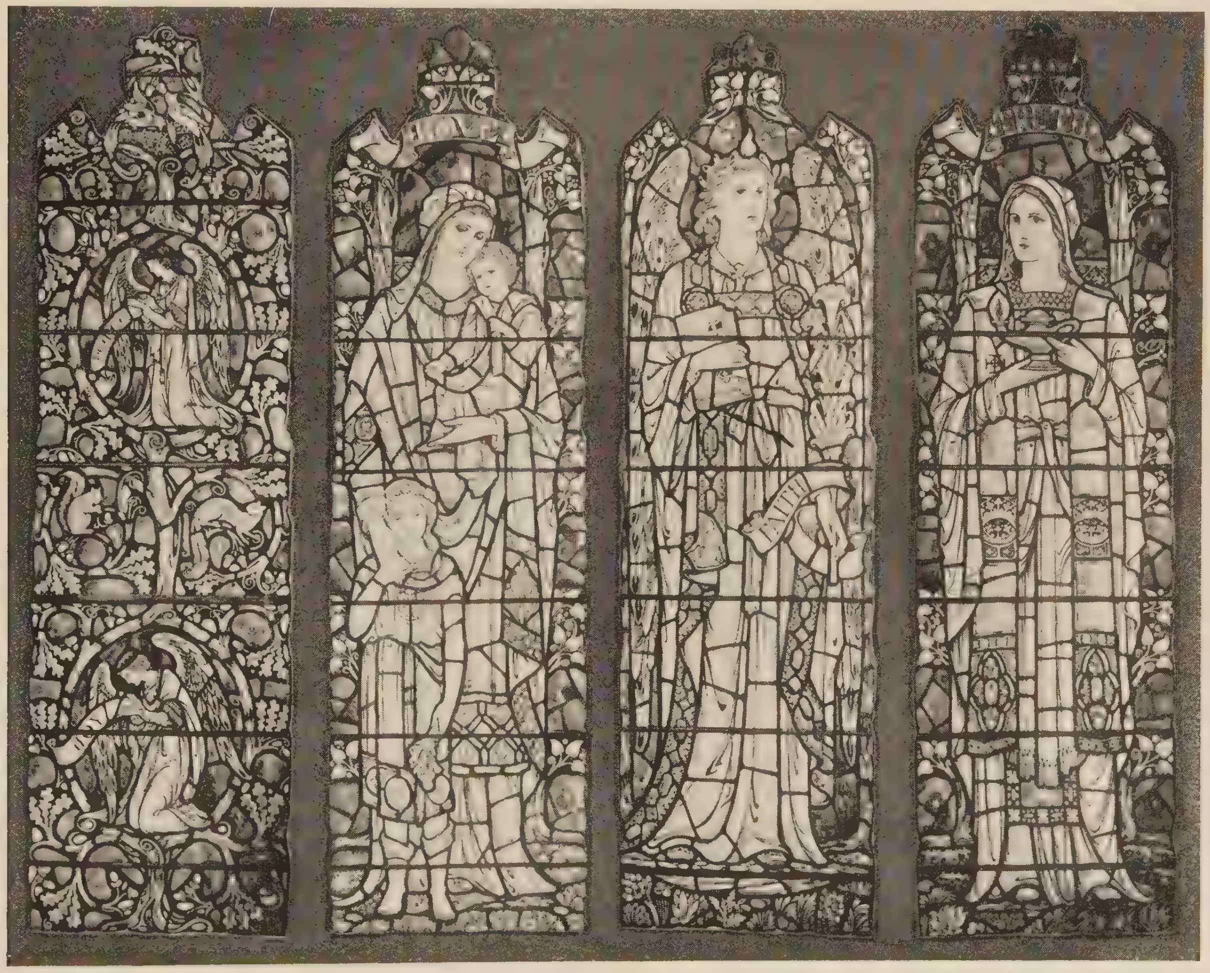
With Illustrations by the Author

FROM the early Christian period, decoration, in its various forms, appealing to the sense of beauty, has been pressed into service to memorialize the dead. The art of stained glass, while it is not as ancient as other mediums of expression, has for centuries been utilized to commemorate the virtues of the departed. For the Christian memorial, stained glass is the supreme expression in terms of color, for in this medium, as in no other, pure transparent color is enhanced and glorified by the light of heaven, without the aid of which it possesses little interest.

It was during the great period of Gothic architecture that stained glass, presumably the outgrowth of the enamelers' art, had its real beginning, and under the patronage of the Church the art flourished, reaching its zenith in the twelfth and thirteenth centuries, notably in France. Even to this day, in spite of its fragility, the cathedrals and churches of France, and in many instances, England, are aglow with marvelous gem-like windows, the work of master craftsmen of the middle ages.

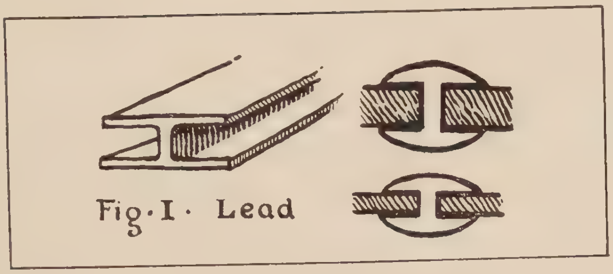
If we study the work of these mediæval craftsmen, we find what their medium was truly meant for. A pleasing harmony of pure color, good design and leading, the essential factors upon which stained glass must depend, were forever before them, and the innumerable examples of their genius for centuries inspired lovers of color. Why is it that we today cannot make windows like the old examples? Has the art been lost? Surely, every worker in stained glass has been asked these questions many times. Although the art itself has never been lost, a proper appreciation for its basic principles was for centuries almost entirely forgotten, resulting in a vast number of ugly pictures in glass,—the result primarily of the advances made in the technique of painting.

Fortunately, the art of stained glass is again taking its rightful place in the art world, and the numerous beautiful windows, made in America and installed in our American churches, bear eloquent

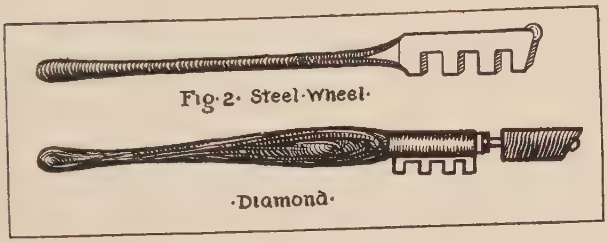


Cartoon for a Window of Four Lights

By Wilbur Herbert Burnham



Form of Strips Used for Leading



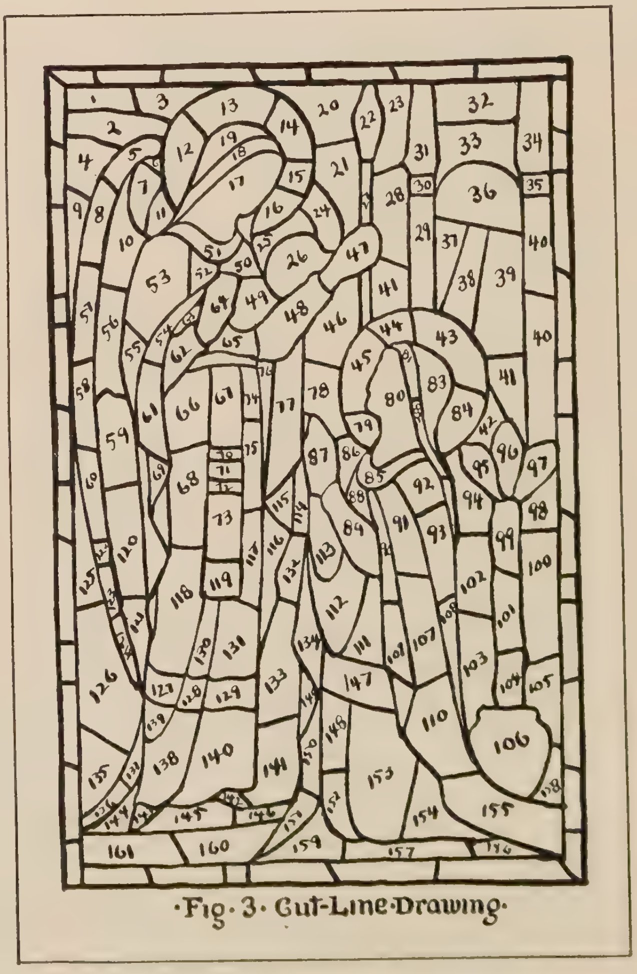
Tools for Cutting Glass

testimony to the progress made by several of our craftsmen. This new uplift of an otherwise degraded art is in no small part due to the progress and achievements of thoughtful architects. Their development of ecclesiastical architecture has inspired many of our younger craftsmen to loftier ideals, and through intensive study of the masterpieces in France and England they have become imbued with the spirit of mediæval work, and do not expect their artistic efforts to attain the impossible. To be sure, a modern spirit in design and drawing is evident, and it should be; for after all the naïvely drawn, and as some writers have expressed it, crudely drawn, figures of the earliest work, are not an essential part of the craft.

As regards stained glass, few people in almost any community are familiar with the art. Indeed, outside of the fact that glass is employed, they have no idea of the craft, nor do they even pretend to know what they admire. A stained glass window is composed of small pieces of white and colored glass held firmly together by strips of grooved lead (Fig. 1) soldered at the joints. It must be clearly understood that the color, the real glory of stained glass, is not painted on the glass, but is produced when the glass is manufactured. Various metallic oxides mixed with the glass while it is in a molten state produce the coloring. It can be readily seen that whenever a change in color is desired in a window, a separate piece of glass must be cut. With a few exceptions, the color pervades the whole piece of glass, and its unequal thickness makes the thin part light and the thick part dark. "Flashed" glass is white glass covered with a layer of colored glass. Beautiful effects can be obtained by eating away parts of the colored glass with hydrofluoric acid. Modern glass manufacturers are making flashed glass in various colors, all highly useful to the artist. The only paint used in the making of a window is an opaque, vitrifiable pigment, used merely to delineate form and detail. No actual color is ever painted on the glass, except a "stain," an early fourteenth century discovery. White glass, with the use of this stain, produces, after firing in a kiln or oven, a beautiful transparent yellow varying in tint from a light lemon yellow to a rich orange.

Although modern manufacturing assists the present-day craftsmen, the same processes are employed as in the middle ages. In place of moulding the lead by hand, the modern workers buy it all manufactured in various sizes and shapes. Gas and electricity now take the place of charcoal for heating the soldering irons, while the diamond or steel wheel (Fig. 2) is used to cut the glass in place of the primitive method of drawing a red hot iron across the glass, and with sufficient hand pressure breaking the glass in two.

Like other technical arts, the conception and development of stained glass necessitate the employment of several trained craftsmen. As in the mediæval days, the window designer should be a thorough craftsman, capable of not only designing, but painting on the glass and if necessary, leading the window. The general custom of having a worker do one special detail of work and no other is a detriment, and tends to a mechanical sameness in execution. No really serious work is ever

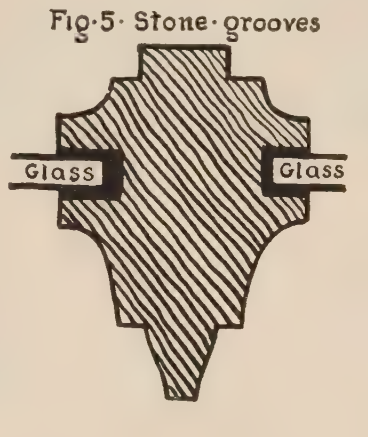


Working Diagram for Cutting Glass
Pieces Numbered for Workman's Convenience

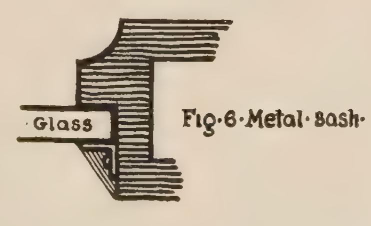
accomplished unless the group of craftsmen work together in perfect harmony, all striving to produce, not a mere window but a work of art.

When a glass designer and craftsman is commissioned to make a window, he should first of all, whenever possible, see the building his window is to adorn and study very carefully its lighting conditions and architectural surroundings. Alas! too many of our churches are already filled with windows in which styles and periods have been sadly mixed,—the result in many instances, however, of personal tastes. Now, thanks to many of our architects, even the so-called commercial glass men must keep within certain limitations.

The preliminary design in water color, drawn to scale, serves as a working model for the artist and gives to the client an idea of the appearance of the completed window. After the design has been approved, the next step is to draw the "cartoon," or full-sized drawing in black and white. In this drawing all the details, including lead lines and "stay bars," of which mention will be made later, are very carefully drawn, for this is the most important drawing of all. The cut-line drawing (Fig. 3) which follows is a tracing of all lead lines and bars. This drawing when completed shows very clearly the various shapes and sizes of the glass, and to offset any future difficulties, the shapes are numbered. Later on, when the window is ready for leading or glazing, the cut-line drawing will serve as a guide. With the aid of transfer paper a duplicate of the cut-line drawing, called the pattern drawing, is then made on heavy paper. This drawing is cut into separate patterns with a double-bladed knife (Fig. 4), but before cutting the patterns are numbered as on the cut-line drawing. The double-bladed knife cuts the patterns and at the same time cuts out a thin strip of paper, or allowance, for the "heart" of the lead as the center is called. It can be readily seen that without the use of numbers it would be extremely difficult to determine the correct position of each piece of glass, once it is cut. Now, with the water color design as a guide, the colors are selected and with a diamond or steel wheel, the glass is cut to conform to the various shapes of the patterns.

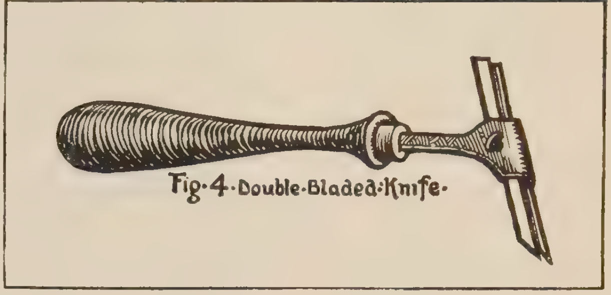

Fig·5· Stone·grooves

Grooves for Holding Glass


Fig·6·Metal·Sash·

Glass Held in Metal Sash

Then the artist places the pieces of glass upon the cartoon, and traces all drawing lines and details on the glass with the vitrifiable pigment mentioned before. For tracing, varnish and turpentine are usually mixed with the pigment, although certain workers prefer mixing water with the color, which is either brown or black. To prevent any possibility of losing the trace lines in the next process, the glass should be fired in the kiln until the painted lines actually become a part of the glass.


Fig·4·Double·Bladed·Knife·

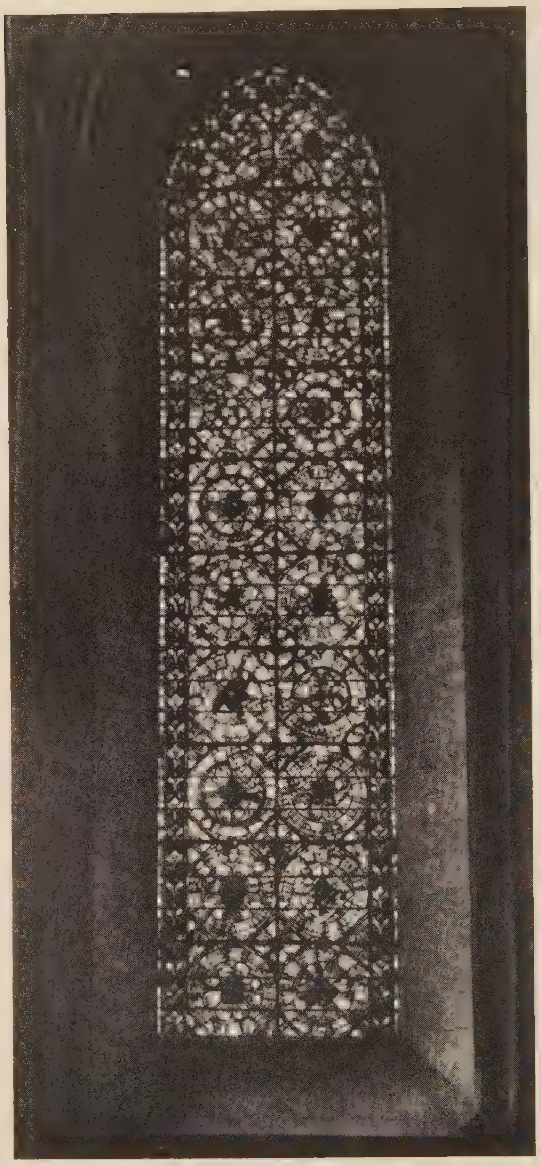
Knife Used for Cutting Drawing

For the ensuing process of painting, it is necessary to set the window in place before the light. A large plate glass easel is therefore placed on a flat bench, with the cut-line drawing placed beneath to aid in solving the puzzle, for each piece of glass must be laid on the easel in its correct position. The pieces of glass must not touch each other, because the allowance for the heart of the lead used later on is necessary. Melted wax is dropped into these spaces at intervals, causing the pieces of glass to hold firmly to the easel. Now, by placing the easel in an upright position before the light, the window is seen for the first time, and any color changes desired are made. Since in the finished window, black lead lines will take the place of the brilliant white lines now visible between the pieces of glass, the spaces are filled, or should be if the craftsman is in love with his work, by filling in with a black paint.

The next step in the painting, the shading so-called, is best when simply done as in the work of the middle ages, but if overdone—and this is where for centuries workers in stained glass sinned both as artists and craftsmen—the window becomes a lifeless, opaque creation. Each piece of glass is covered with a mat of the same pigment used in tracing, with gum arabic as the adhesive medium and water to thin the color. When the color is dry, lights are taken out with a bristle brush or with the finger and palm of the hand, leaving only enough paint to give to the glass an interesting texture, and which if thoughtfully and lovingly done, will mellow the color of the glass without causing loss of any of its particular gem-like brilliance. In approaching the painting of a window, the average glass painter pays but little attention to the distance the window is to be seen, painting a clerestory window as he would a small window that is to be seen at a close range. This is wrong. Light plays many tricks when shining through glass. A clerestory window must be painted boldly, with the use of heavy trace lines, getting a result that is strong in design and rich in color.

With the painting completed, the pieces of glass are removed from the easel and fired in the kiln so that the painted surface feels smooth. Again the glass must be waxed up on the easel and painted for the second time, for the intense heat in the kiln has probably reduced the paint and in some cases burned it almost entirely away. Even a third painting is not infrequent, and a special firing for stain gives the most satisfactory results.

The glass is now ready to be leaded. The cut-line drawing is laid on the glazing bench; a straight edge of wood is nailed to the base and a piece the length of the drawing to one side. Long strips of wide lead are placed against these wooden bars and, beginning in the corner, a piece of glass is fitted into the grooves of both leads. A strip of smaller lead is now cut long enough to cover the opposite sides of the piece of glass, and into the free grooves of this lead the next piece of glass is inserted, and so on, until all the pieces are leaded and the joints soldered.



A Famous Window in "Grisaille," North Transept, Salisbury Cathedral

The window is now complete as a work of art, but one more process is necessary before the window can be installed. The window is laid on a flat bench and completely covered with a waterproofing cement, composed of Portland cement, whiting, lampblack, boiled linseed oil, turpentine and a patent dryer. With a stiff brush the cement is rubbed into the leads on both sides of the window, and after cleaning off the glass, the cement is allowed to dry and harden.

To enable the window to resist wind pressure, horizontal iron bars are fastened into the window sash at intervals, and to these bars the window is joined by small pieces of copper wire soldered to the lead and twisted around the bars. In early windows these bars frequently were bent to conform to the designs of the windows. Especially in the late thirteenth century, when the great medallion windows were made, the bars were a governing factor in the design, and these heavy black lines gave contrast to the color and strength to the design.

In the setting of a window the glass worker is frequently confronted with difficulties. When a window is to be set in stone, the grooves are sometimes made too shallow, and the setter finds it necessary to take the window apart at various places in order to insert the glass into the grooves. Whenever the stonework is intricate in design and construction, this cutting apart cannot be avoided. However, if the grooves are made deeper on one side than on the other (Fig. 5) the setting will be made easier, for after inserting the glass into the deep groove, it can be pulled back into the opposite groove without any great difficulty. A wide groove is also helpful to the setter. Fig. 6 illustrates the usual method of setting glass into a metal sash of a commercial type. In the place of a stop bead, as used in an ordinary wood sash, small metal clips are screwed into the sash to hold the glass firmly in place.

This concludes a brief description of the many interesting processes necessary to the making and installing of a stained glass window. As has already been said, the art of the glass worker has never been forgotten, but ages of neglect of its best practice resulted in debasement from which the art has been long in recovering. Today its principles are once more understood and practiced, and stimulated by the encouragement which has followed the revival of interest in everything connected with church architecture, the art of stained glass has resumed its place high in the company of the arts which serve as the handmaids of religion. It will without doubt achieve triumphs as notable as any in its past.

The Architect and the Building Committee

By GEORGE E. MERRILL

Architect-Secretary, Department of Architecture, The American Baptist Home Mission Society

"NEVER again!" Such is the sentiment all too frequently expressed with vigor by architects who have sacrificially endeavored to serve a church, only to have their efforts misunderstood and to find themselves blamed for a lack of results not at all the fault of the architect. Fortunately such experiences are not universally met with, or the situation would be tragic, but differences between churches and architects do arise, and seemingly more frequently than in other lines of building work. Can these misunderstandings be avoided and a happy handling result? From a study of hundreds of church building projects, we know that this *can* be done, and, where the proper steps are taken, that this is *being* done. The purpose of this article is to make clear the way. Permit the writer to say that he has functioned happily both as chairman of a building committee, having to select and deal with the architect, and, in other instances, as the architect himself, having to deal with a church building committee.

The same committee member and the same architect, having cordial relations all through the erection of a commercial structure, may have serious differences ere a church is built. The owner of the commercial building, thoroughly informed in his own particular line by searching analysis and by visiting in his travels other buildings similar in character, knows what he wishes and can make the matter clear to his architect. No lack of understanding exists. The architect, skilled in commercial building work, knows how to interpret the owner's wishes, and a satisfactory handling results. A church committeeman visits but rarely other churches outside of his own home city; furthermore, he understands but little of his own church aside from his own individual line of activity. He is generally unaware that in the past few years the requirements of the church in its building arrangements have undergone a revolutionary change. Attempt to discuss with him a five-fold program, or as to whether six or eight departments shall be provided for the church school, and he will not understand what is meant. If by some fortunate circumstance he does have some understanding of such matters, commensurate with his knowledge as to his commercial building needs, he may have an architect for the church who does not understand, and so the committeeman, usurping the architect's prerogative, directs that this and that be done to revise the plans submitted. The net result is a church structure highly unsatisfactory for use, and "the architect is to blame." The lack of understanding is frequently as chargeable to the architect as to the committeeman.

In accomplishing a desired satisfactory building result, the work of the committee and the work of the architect are distinctly different, because they deal in entirely different realms. It is the duty of the committee to furnish the program of daily activities and determine the capacity requirements, and that of the architect to not only provide the requirements but to so plan the building as to ideally house the activities.

Let us suggest one method of procedure which, when consistently employed, operates to produce a happy building. The initial step is for the church to officially choose a general committee, not limited to the official board, but including the pastor or rector and as many active members as are desired, who are representative of each of the boards and organizations within the church, the younger people as well as the older, and of both sexes. This committee may well consist of as many as 20 members, for it is charged with responsibility along four distinct lines of procedure. This committee should be authorized to incur such initial expense as may be necessary to discover the church's building needs. When this general committee organizes, it will appoint from its own committee members four sub-committees, of say five members each, (1) on program and requirements, (2) on architect and building, (3) on ways and means, and (4) on publicity and collections. While each sub-committee will at once begin to study its own duties, and gather data to that end, the sub-committee on program and requirements will be the first to actively function. Of this committee the pastor or rector should certainly be a member; indeed he may well be an ex-officio member of all sub-committees.

The program and requirements committee should begin its deliberations by engaging a thoroughly informed church architectural adviser at a fixed fee; it should analyze the community to be served; study the church membership and its constituency; discover wherein the church has failed to function and why; judge as to how best to develop new contacts; weigh possibilities for new activities; determine what facilities are to be provided or space to be allotted for the activities, both old and new; decide as to the relative importance of the several needs; fix upon a site and set the financial goal to be attained. This sub-committee on program and requirements should report its findings to the general committee with sketch plan studies illustrative of its recommendations, and, when approved by the general committee, this report should be submitted by the general committee to the church for its adoption and for authority to commission a practicing architect and proceed with the work. A printed ballot mailed to each member of the parish with a line for his signature and a space for voting "yes" or "no" has been used with great success for reasons at once apparent. It is vital that each member of the church at this point shall have had an opportunity of having his full say. This shuts out later fault finding, and commits the entire parish to the procedure.

While the sub-committee on program and requirements has been at work, the sub-committee on architect and building will have been making investigations; the sub-committee on ways and means will have been canvassing in a general way the financial resources of the church for its building project; the sub-committee on publicity and collections will be gathering preliminary data. All being members of the general committee, they will be fully informed through conferences with the sub-committee on program and requirements, so that, immediately the church has authorized the general committee to proceed with the building, these other sub-committees will be ready to function.

The general committee, now authorized by the church's membership to proceed along definite lines, engages an architect for the building. The sub-committee on architect and building will recommend, and the general committee will act. The building committee will appoint *one* of its number to have all dealings, preferably in writing, with the architect. Changes, that chief element causing exasperation and added cost to architects, are now avoided. The time for backing and filling is past, the program is set, and the requirements are established, so that the architect, furnished with this data, may proceed to develop his drawings and other documents which, when approved by the general committee, are sent to contractors for offers, and contracts for the building are let on the sanction of the general committee.

The sub-committee on ways and means will not encounter adverse criticism, since by vote each member of the church has committed himself with regard to the project. There can be no complaint of "taxation without representation." The canvass for subscriptions having been completed, the sub-committee on ways and means may cease to function, but often it remains active, seeking to enlist newcomers in the building enterprise; in any event, its members remain active on the general committee. The sub-committee on publicity and collections will work "hand in glove" with that on ways and means. One need not go into detail as to methods, except to say that an illustrated booklet of the proposed building, giving full explanations, is one of the most helpful aids which this sub-committee can render the sub-committee on ways and means. Collections on subscriptions usually outrun the completion of the building, so that this sub-committee generally functions even beyond the life of the general committee.

A few comments about the architectural adviser during the preliminary work of the sub-committee on program and requirements may be helpful. The choice of the architectural adviser is a crucial step. The man selected must not only be competent architecturally but he must have an intimate first-hand knowledge of the inner workings of a modern church program in all of its parts, and be qualified to point out to the sub-committee on program and requirements wherein their proposed program is unbalanced or behind the times. He will furnish a comprehensive questionnaire, such as is suggested upon page 163, to the committee to assist it in making its entire analysis. He is charged with the responsibility of pointing out to this sub-committee what other churches similarly situated are doing, and leaving the decision to the committee. He will advise upon the matter of site, and furnish an illustrative sketch plan showing how the desired program may function, how the capacity requirements for each activity be obtained, and how all portions of the proposed structure may be properly coördinated. To this end seven religious denominations have now organized bureaus or departments of architecture which specialize in furnishing the consultation and advice just referred to. These advisers do not supplant the practicing architect, but devote their entire attention to an analytical study of the constantly growing needs of the church in its five-fold activities. With the denominational contacts back of these church advisers, with their constant and intimate association with religious educational and other specialists, there is now wealth of data available for both the churches and the architects, not previously obtainable.

One of the many benefits resulting from the united efforts of these advisers is their insistence, to the churches served, that worthy architects be employed, namely those thoroughly qualified by education, experience, ability and character. By this emphasis churches are coming to realize that satisfactory church buildings do not just "happen"; that the final result is fixed from the start by the ability of the architect chosen; that the church should insist upon paying the full architectural fee and thus avoid finding itself under obligation to its architect because he has made a donation.

The architect's dealings, being conducted as already said, with one individual, instead of his having to hold innumerable conferences with a large committee, and the architect being given a signed statement as to program and a written report as to requirements, together with an outline of an especially studied solution to illustrate the particular project in hand, he finds himself, at the start, fully informed as to the church's wishes, expressed in unmistakable terms.

We have, then, a comparatively new situation in church building work, brought about by a recognition of the fact that, a new day having dawned in church building requirements, special study by experts employed for the purpose is necessary to discover the exact nature of the new and changing needs and to make these clear to the architectural profession. It is recognized that, just as no church can carry out satisfactorily a given program without proper facilities, so also as has been said, "the very character of a church is determined by the plan, arrangements and the appearance of its buildings"; an astounding statement, but true.

REPORT OF CONDITIONS COVERING BUILDING PROJECT FOR:—

Name of Church.......................................City.......................................State..........................

Reported by.......................................Pastor.......................................Layman..........................

Street Address.......................................Date.......................................

Answer FULLY using separate sheet if necessary.

CHURCH

Seating Capacity Desired?.......................................

Membership?................ Average Attendance?................Percentage of Membership Increase in last 5 years?..........%

Use of Building for other than regular services?.......................................

SUNDAY SCHOOL	Ages.	Enrollment.	(Do not include Home Dept.)	Ages.	Enrollment.
Cradle Roll	1-3 yrs.	....	Intermediates	12-14 yrs.	....
Beginners	4-5 yrs.	....	Seniors	15-17 yrs.	....
Primary	6-8 yrs.	....	Young People	18-24 yrs.	....
Juniors	9-11 yrs.	....	Adults	25 yrs. up.	....

Average attendance of entire school.......................... Growth of School to be provided for....................%

COMMUNITY

Population (1 mile radius)?.......................................Estimated Growth?.......................................

Character and Principal Industries?.......................................

....

Locality of Proposed Building:

High Grade Residence.......................................
Suburb (distance from center of city).......................................
Cheaper Residence.......................................
Downtown District.......................................
Apartment House District.......................................
Factory District.......................................
College Center.......................................
Foreign District (give nationality).......................................

Distance from nearest church building of the same denomination? ....

Public Institutions for Community Welfare?.......................................

What is largest meeting place?.......................................Seating capacity..........................

Recreation Centers available?............... Gymnasium needed?....................... If so, why and size?..........................

Community attractions tending to draw from the church? ....

PROGRAM OF CHURCH'S WORK. (Describe in full, giving list of all Sunday and week day activities to be carried on in the church buildings):

....

....

BUILDING DESIRED. Describe present situation, reasons for building, and just what building is wanted, and whether new, alteration or addition. If sexton's living quarters are to be provided, give facts. Use separate sheet and answer in detail.......................................

Say from what direction is major approach to site and why ....

CHOIR. Accommodation, Kind..........................For how many? .... Where?..........................

ORGAN. Probable cost? $.......................Describe organ.......................................

....

ARCHITECTURE. Name any decided preference as to architectural style?.............................. of {Stone
Brick
Wood} ....

ARCHITECT. Have you engaged your architect?....................If so, give name and address.......................................

FINANCES

Best Property in Community (price front foot)?.............................. Your Lot (price front foot)?..........................

Cost of Building? (Do not include furnishings) 1st Unit $.................... 2nd Unit $.................... Total $....................

Is congregation financially able to build adequately?.. ....

What Church Architecture Means to the Minister

By REV. LOUIS C. CORNISH

DOES your church edifice help or hinder the life of your parish? Is your church plant,—church, parish house and parsonage,—an asset or a liability? Does it lift, or is it a load to be carried? Does it create enthusiasm or depression? Do people love and venerate it, or do they merely tolerate or even dislike it?

Ask the ministers in all parts of the country these questions, as I have done for some years, and their answers will reveal in good measure what church architecture means to them. Furthermore, the answers can be summarized fairly well, there being always a *something plus* at the end of the category. All will agree on strategic location, adequacy of buildings for their purposes, dignity, and it may be—beauty. These are the obvious requisites and tend to follow the sequence here given them. Beyond them lie considerations less easily listed, but of primary importance. Aside from location, size, type or cost, to satisfy the intelligent minister the church must be "worshipful." If it is to be an asset, the church must be itself a symbol, even an embodiment, of its high purpose, and must express to the worshipers harmony and a sense of the eternal mysteries.

Failure to attain these values is frequently due, and every architect knows it well, to the ignorance of committees and sometimes of ministers, who refuse good advice and insist upon following their own poor judgment; and it is due also, and many able architects fail to realize this, to the vagaries of architects who care little for religion and are profoundly ignorant of what a church attempts to achieve. "What would you do with it if it were yours?" asked a noted preacher of a well known leader to whom he had shown a great pile of brown stone and red tiled roof and tower, erected by an architect of high repute but uninterested in churches. The reply was, "Tear it down and let a religious architect rebuild it."

The lack of religious embodiment in church building finds plentiful illustration, often of amazing crudity. Imagine, for example, a church, parish house and parsonage to be erected on a strategic corner lot in a large city. The plan showed the parish house apparently in violent collision with the church. The "church auditorium" was square. One wall was broken by a high proscenium arch, filled by a split and roll wooden curtain which shut off the stage. The pulpit stood shyly in a corner. Theater chairs, arranged on pivots, turned either toward pulpit or stage. Yet the designer had been trained in schools of good repute. What could such an arrangement mean to a minister, in conducting worship, except humiliation and handicap? Unfortunately, this is not an exaggeration. Buildings of similar crudity are familiar throughout the country.

By way of contrast, take what is perhaps the most elaborate attempt in late years at religious symbolism. One enters the Memorial Church at Fairhaven, Massachusetts, through a deep porch, above which rises a stone cross of delicate design. It does not command; it gently challenges. The meaning is clear: only through the shadow of the cross, by self-sacrifice, do men enter the religious life. Great bronze doors open into the porch. Around the panels in decorative niches are figures of the saints, ancient and modern; the fellowship of the saints welcomes you to its high comradeship. In the marble pavement, suggesting but not insisting, are inlaid the signs of the zodiac, the ancient symbols of the outermost realms of space; he who lays hold on religion gains truth that is universal, as true in distant constellations as on this planet. In the beautiful stone baptistry beneath the high tower stands a noble font. Over it hangs a tabernacle or canopy made of olive wood brought from the Mount of Olives, enshrining a multitude of tiny figures of the saints, skillfully carved at Oberammergau; the striving of the saints through the centuries blesses the baptism. At the chancel end of the church rises a glorious window, the "Adoration," typifying the leadership of Jesus and the mystery and divine possibility of life for all the children of men. One may visit this shrine times without number and always find some fresh and delicate religious suggestion through the symbols of truths that are old and yet forever new. Costing sums estimated at millions of dollars, obviously this is a unique edifice. Many would not wish its elaboration of beauty, even if free to choose it; but the essential values here embodied in a multitude of details can be expressed in far simpler form.

"The quest for an auditorium" might well describe much church building during the latter half of the past century. "The quest for a church" has built many modest but lovely structures. Most of our eighteenth century churches bear witness. Those built in the earlier part of the nineteenth century also testify. Those of the latter half of the past century, however, disclose a confusion of quests. More recently there has been a marked and encouraging increase in the reverent quests for the church. To the minister, the architecture of his church is of supreme importance. It means a blessing or a curse upon his efforts to serve both God and man.

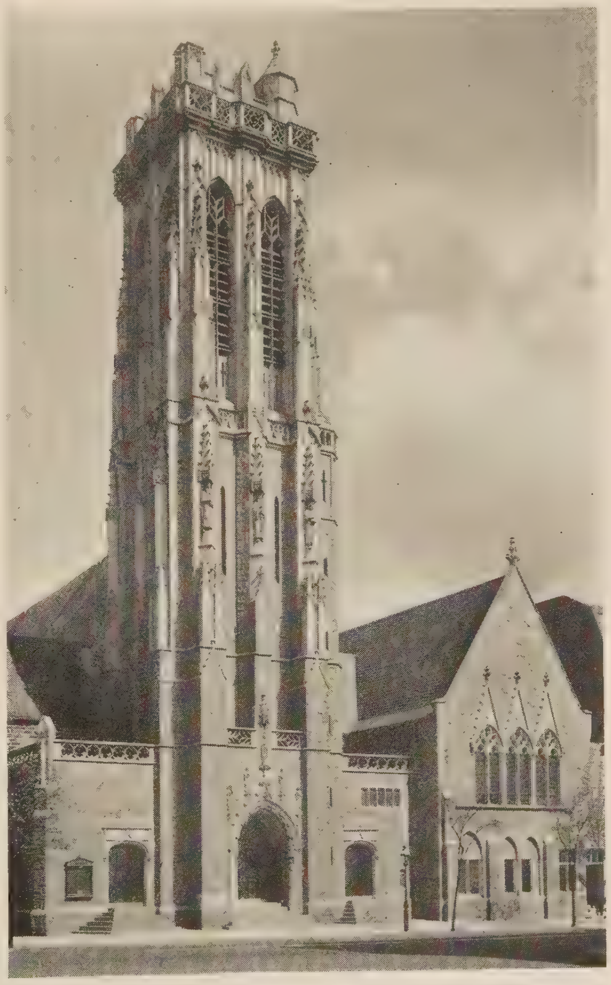
Architectural Requirements of the Episcopal Church

By REV. DR. HUGH BIRCKHEAD

Rector of Emmanuel Church, Baltimore

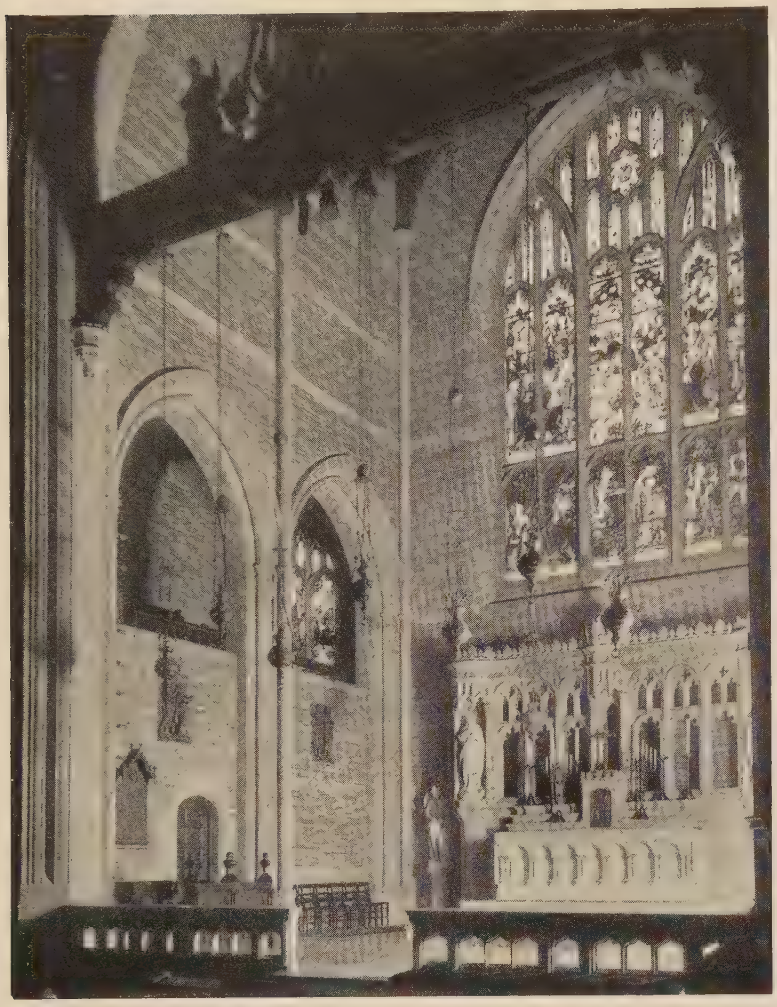
THE condition of ecclesiastical architecture in America represents adequately the present vagueness in regard to the requirements for a building to be used for the purposes of worship. It is lamentable that belief and prejudice, as well as reaction, have so greatly interfered with architectural form. A great many churches symbolize a strong grudge or a permanent fear of the beautiful, which was one of the definite results of the Reformation, and yet with the gradual growth of a broader culture and greater discrimination in American life we desire, and are willing to pay for, more comely places of worship; but these must still preserve certain marks of sectarian difference, and hence the average architect, having in mind the consistent beauty of the churches and cathedrals of the old world, is thwarted by a constant compromise between what should be and what must be. One of the problems which face him at the start is the effort to put into a building which is primarily an auditorium in most cases the lines and feeling of a sanctuary.

The Episcopal Church is the most inclusive group among the 202 religious bodies into which Christianity in America is divided. Its worship varies from the rigorous simplicity of a Protestant service to the elaborateness and sensuous appeal of the Church of Rome. It is thus impossible to describe any one building as possessing all the attributes and requirements for every congregation. In New York, for instance, there are three outstanding examples of modern church architecture, all of them satisfactory to the congregations that make use of them, and yet quite different in treatment, conception and atmosphere. St. Bartholomew's, designed by Bertram Grosvenor Goodhue, is a well adapted Byzantine structure in which the salient requirement was an auditorium in which every word can be heard by every worshiper, no matter where he happens to sit. It is severe in its simplicity of outline and beautiful in its detail. Such a building was originally planned by the age that produced it for a service magnificent in color, elaborate in ritual, and with a strong emphasis on the mystical side of religion. St. Thomas', designed by Cram, Goodhue & Ferguson, frankly suggests the Gothic churches of western Europe and England, prior to the Reformation. Here again the lack of color which the service itself was supposed to give is conspicuous, and the auditorium is strongly emphasized. The Church of St. Mary the Virgin, designed by Le Brun, on the other hand, which derives its inspiration from the French Gothic, has a very elaborate and colorful service, with an orchestra, two choirs, many lights, and clouds of incense, and the spoken word is subordinate in the mind of the congregation to the ornate service.



"Christmas Tower," Emmanuel Church, Baltimore
Woldemar H. Ritter, Architect

In the old days the architect was not only a churchman but was also usually a priest or a member of a monastic order. The building he created was an adequate setting for the ritual which he knew and loved. There was not the present divorce between a borrowed background, coming from the centuries when beauty was frankly considered as truly an attribute of God as goodness and truth, and a service which is clad usually in black and white, and is too often a setting for the personality of a preacher. We are perfectly willing to have an elaborate setting provided that it meets our dogmatic differences, especially from the Church of Rome; but the minister and his attendants and the choir must not be expected to conform to the requirements of a building which comes down to us from the days when all the men in the congregation dressed in brilliant colors and when it was quite natural that



Sanctuary, St. Ignatius' Church, New York
Choristers placed in gallery at one side
Charles C. Haight, Architect

the clergy should have their sacred liveries, as the servants of God, equally splendid and in shades representing the Church's seasons of joy or penitence.

The best that has yet been attained follows the lines of Gothic architecture, usually stripped of the element of mystery, and so arranged that everything may be seen at a glance and that the words of the preacher may reach the farthest listener in the auditorium. As a result of these conditions, Gothic architecture has suffered more than any other type; because the rector and vestry do not hesitate to insist upon their own ideas, and because their knowledge of architecture and interest in correctness have yet to be educated into being. Our modern efficiency in lighting is perhaps the greatest enemy to the functions of a church as a place of prayer and meditation. The "dim religious light," which has so much to do with the sacredness of old world churches, has disappeared. It is true that this is also due to the fact that a congregation is expected to read and no longer follows the service from memory or repeats prayers that have been familiar since childhood. The average Protestant church is practically never used for worship between services, and when the congregation is assembled on Sundays, it depends upon the way in which it is led from the chancel, and waits through the processes of a service for the moment when the preacher ascends the pulpit and claims its interest by the force of his mind and personality. What we need, in these days, is a conference of clergy, psychologists, artists and architects to discuss the whole matter of public worship. The beautiful must be given its place once more as a part of the personality of God Himself, and a compromise must be made between the necessity of making the printed page visible and the darkness which in all times has helped to bring God nearer to His kneeling children.

Another misconception which has grown into a custom is the placing of the choir between the congregation and the sanctuary. This was originally done by the monastic orders, as the choir consisted of their own members and occupied a position between the altar and the people. In the cathedrals the choir is a smaller church, used for daily services. There is no excuse for this in an ordinary parish, and it would be a good idea if architects would suggest to congregations that the singers be placed somewhere adjoining the chancel so that they will not arrest the eyes of those in the pews as they look toward the sanctuary.

In closing I wish to make a definite plea to architects, asking them to study carefully the conditions of worship as embodied in form and color; to show more energy in dealing with clergymen and building committees, usually prejudiced and grossly ignorant; and to help us to evolve the American church as something which is beautiful and makes possible the desire for the mystical element in religion as well as the sermon. They must bear in mind that most of us do not know what we want and are waiting to be led with authority, and that after our prejudices have been overcome we are grateful to the wisdom and firmness that have made us choose a better way and given us those things which we had neither the vision nor the experience to know were necessary in a place of prayer. I would also emphasize the fact that the architect who has no religious feelings himself can rarely accomplish "the beauty of holiness" as an academic problem. Let us hope for more men who will make it the mission of their lives to clothe in color and form the unquenchable longing of the average American for a real sense of the nearness of God.

Acoustics of Church Auditoriums

By F. R. WATSON

University of Illinois

THE attention of architects is being more and more directed to the question of the acoustics of large audience rooms. The disquieting knowledge of the defective acoustics that exist in many completed halls and the outspoken protests of the auditors create a demand for reliable information by which such defects may be avoided in building new auditoriums. With many architects, however, there is the desire not so much to avoid the defects, as to secure the really desirable feature of acoustic excellence whereby speaking is easily understood and music is rendered under conditions that enhance its delight.

In former years, because of the lack of suitable guidance, the nature of the acoustics was to a great extent a matter of chance, with the result that architects considered it hopeless to attempt to secure acoustic results with certainty. It was also generally believed that the best method of correcting faulty acoustic properties was by stretching wires or installing sounding boards. At the present time, due largely to the painstaking investigations of the late Professor Wallace C. Sabine, the knowledge of the subject has grown to such an extent that auditoriums may be designed with certainty of having satisfactory acoustics, and defective auditoriums are corrected with confidence—but not by using wires and sounding boards, which are shown to have but little effect.

Perfect acoustic conditions in an auditorium are obtained when an average sound rises to a suitable intensity in every part of the room, with no echoes or other distortions of the original sound, and then dies out quickly, so as not to interfere with succeeding sounds. To secure these ideal conditions it is necessary to incorporate three important features in the architectural design. In the first place, the volume of the room should be proportioned to the source of sound so as to insure a suitable loudness; that is, so that each cubic foot of space will be filled with the right amount of energy to comfortably excite the sensation of hearing. Instrumental music, particularly from brass instruments, thus requires a larger volume for distribution of its energy than speaking. The second factor necessary for good acoustics involves a consideration of the positions, sizes and shapes of the walls. These should be arranged so as to avoid the possibility of there

Church of the Sacred Heart, Washington

Murphy & Olmsted, Architects; Maginnis & Walsh, Associate Architects

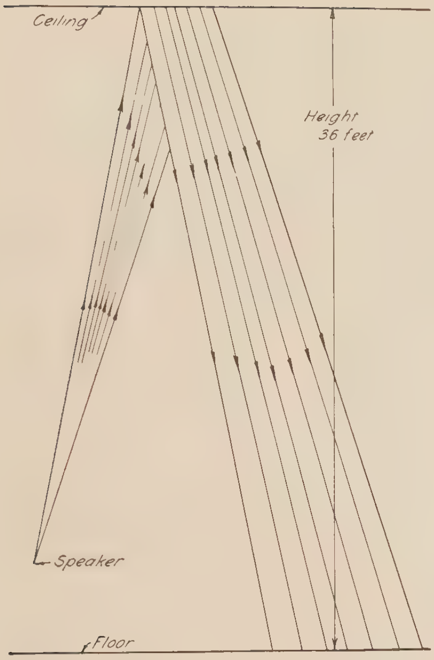


Fig. 1. Reflection of sound from flat ceiling. No defect

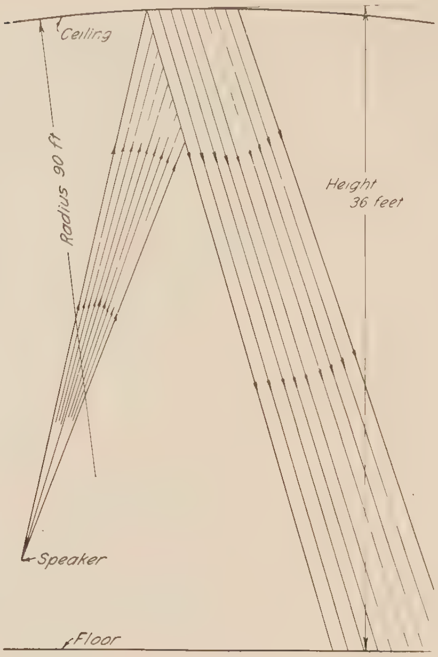


Fig. 2. Radius of curvature more than twice ceiling height

being echoes and other distortions. After the volume and shape of the room are decided, the third and most important item to consider is the character of the interior surfaces, to make sure that the correct amount of sound absorbent will be present to damp out the residual sound or, technically speaking, to reduce the reverberation.

Suppose these general ideas are applied to the particular case of church auditoriums. The sources of sound are three: speaking, vocal music, and instrumental music, usually a pipe organ. A question immediately arises about the volume or cubage of the room, because music is more intense than speaking and requires a larger volume for best effect. The obvious solution will be to compromise on an intermediate size which will be satisfactory unless the music is extremely loud or the speaker's voice is weak. Except for cathedrals, the decision about volume depends also on the probable size of the congregation or audience, and here the further question arises as to how large an auditorium may be and still have acceptable acoustics. Not enough experiments have been made as yet to answer this question with satisfaction, but the writer cites the case of the Eastman Theater, in Rochester, which has a volume of 790,000 cubic feet, accommodates 3,340 auditors, and is considered satisfactory for pipe organ music and also for speaking.

The effect of the walls of an auditorium in regard to position and shape is readily understood by a geometrical study of the main sections of the room. Sound rays are drawn from the position of the speaker to the various surfaces where reflection takes place. Curved walls, arches and domes concentrate the reflected sound and are quite likely to produce trouble. This does not mean that rooms must always be rectangular for best acoustic effects, but that curved surfaces must be specially designed and placed so as to avoid causing defects. For instance, ceiling surfaces may be curved provided the radius of curvature is either more than twice, or less than half, the ceiling height. Figs. 1 to 4 represent the reflection of sound from various types of ceiling surfaces and show that satisfactory effects are obtained except when the radius of curvature is nearly equal to the ceiling height.

Curved side walls are more likely to produce trouble than curved ceilings, because they are nearer

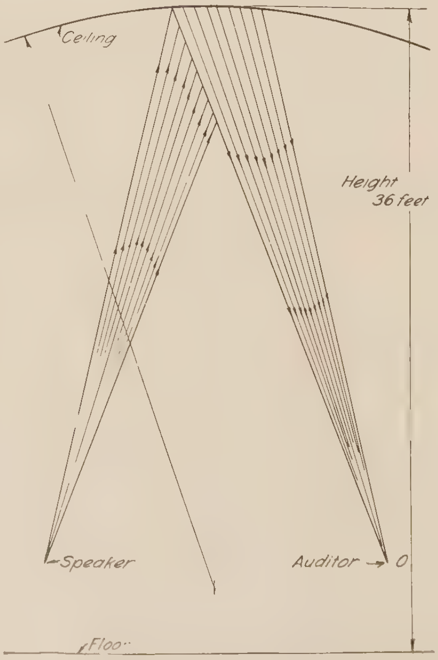


Fig. 3. Radius of curvature nearly equals ceiling height. Marked echo

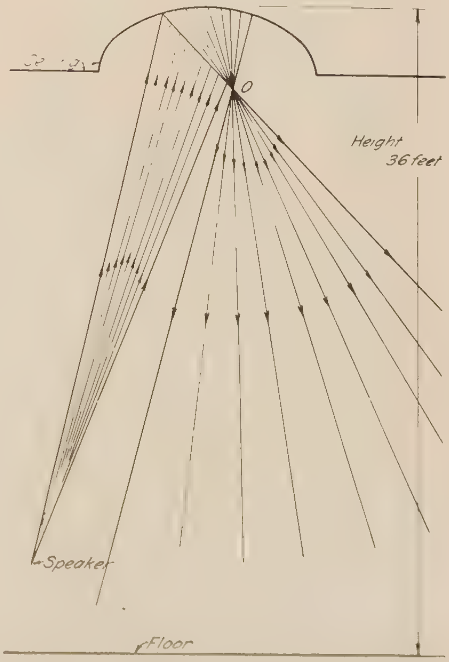


Fig. 4. Radius less than half ceiling height. No marked defect

the auditors. This is understood by referring again to Fig. 4 and imagining that the curved surface is now a side wall. Auditors in the position at 0 will get an undue concentration of sound. Similarly in Fig. 2, with a speaker at some distance from the wall, the sound will be focused for some auditors. If it is desired to make the general shape of a room circular, the side walls may be made the plane sides of an octagon or some other geometrical figure rather than keep them circular.

Sometimes echoes are set up by two or more reflections from walls. Fig. 5 illustrates such a case where sound from the speaker is focused by a side wall of double curvature and then spreads out only to be focused again by a second curved wall that produces an echo.

The third important feature in acoustic design concerns the amount of sound absorbent needed for good results. The lack of proper adjustment of this feature is the most common cause of defective acoustics. After a sound has made its impression on the auditors, it should die out rapidly enough to leave the field free for succeeding sounds, a condition that requires the presence in the room of a calculated amount of absorbing material.

Consider now the application of these three essential factors to the acoustic correction of an actual church auditorium of 242,000 cubic feet volume and seating capacity of 700.* The volume is such that the room will be satisfactory for usual speaking and music, but the sound of a brass band will be overpowering in its loudness, and a weak-voiced speaker can be heard only with difficulty. The ceiling walls, shown in Fig. 6, are curved with the radius almost equal to the ceiling height. Sound proceeding from the speaker to one of these walls is reflected, brought to a line focus, and then spreads out so as to cover an elliptical area of the floor. Sound striking farther back on this wall is reflected to the rear wall and from there back to the floor. Both of these echoes were quite marked. The other surfaces in the room were plane and produced no particular trouble which interfered with the acoustics.

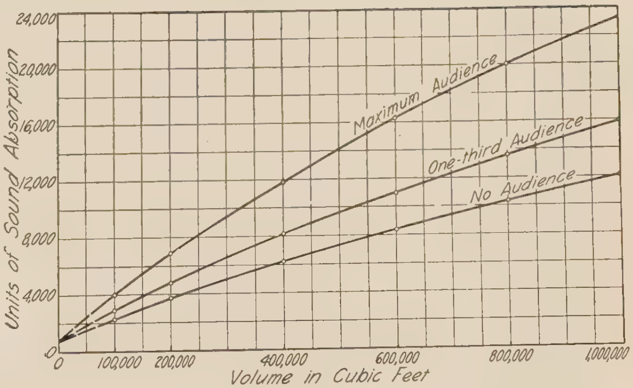


Fig. 7. Showing sound-absorbing material needed for a particular volume

The amount of sound-absorbing material needed was calculated by means of a formula and table of absorbing coefficients. The calculations are not repeated here, but a more direct solution is given by means of a curve, Fig. 7, which gives the amount of absorbing material needed for auditoriums of different volumes. The data for this curve have been collected for a number of years by the writer from auditoriums with satisfactory acoustics. For the volume in question, 5,500 units of material are needed when one-third of the capacity audience is present. Data concerning the absorbing material in

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*See book on "Acoustics of Buildings," in which calculations are given in detail for a number of auditoriums.

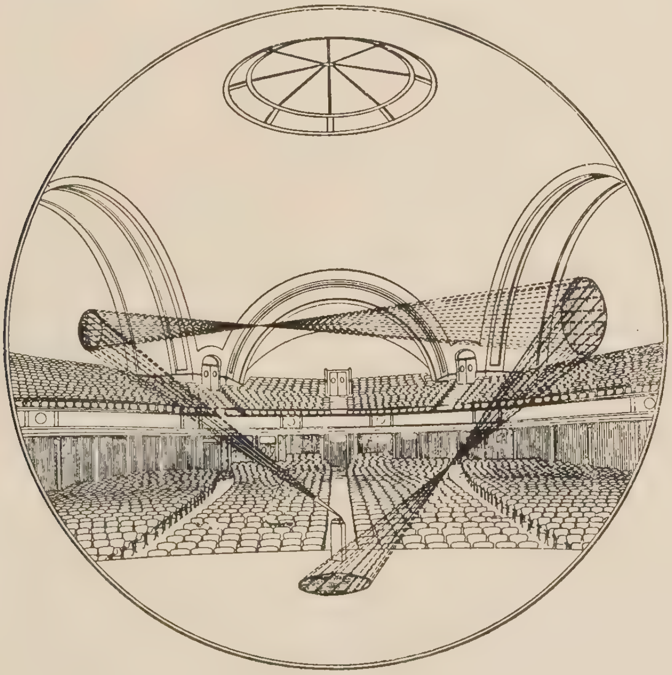

Fig. 5. Two reflections from curved walls, resulting in strong echo

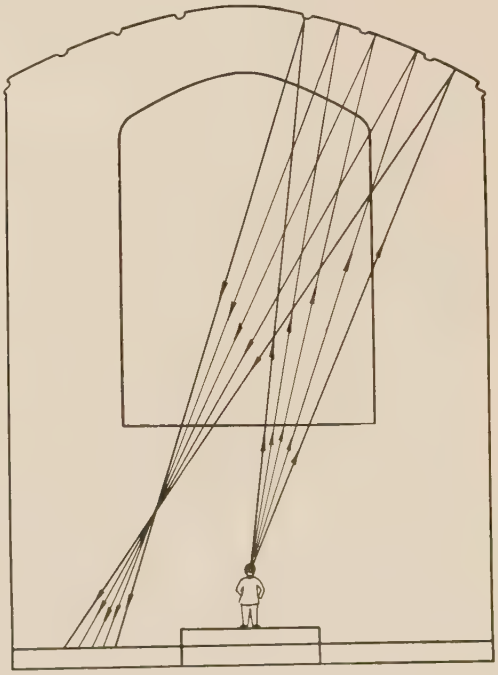

Fig. 6. Reflection of sound from a church auditorium ceiling. Echo formed

the room are given in the tabulation included here.* It is seen that with the one-third audience, only 1,974 units are available and that there must be added the difference between this number and 5,500 units to give the desired effect.

It remained to decide the kind of material and best positions for installation. After a study of the problem it was recommended:

1. That hair felt, 2 inches thick, be placed in the ceiling coffers. This served to absorb sound and to assist in breaking up echoes. Sound waves on striking the felt are partly absorbed and changed in phase on reflection compared with the waves reflected from the surrounding woodwork, thus producing interference which influences the acoustics.

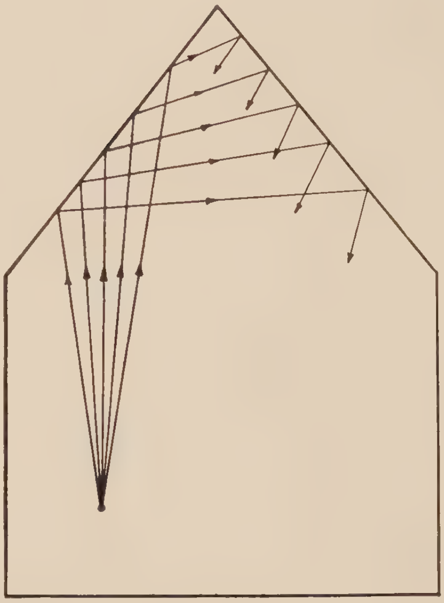

Fig. 8. Diagram of Gothic ceiling showing double absorption. Small chance for echoes

2. Either that cushions be placed in the seats or that a carpet be laid on the floor.

3. That a number of curtains or tapestries be hung in front of the stone side walls.

The installation of materials as recommended would serve to reduce the echoes and to give an acceptable time of reverberation. A word or two might be added about materials for acoustic treatment. There appears to be a satisfactory movement at the present time to produce suitable products, and there are now available or in the process of development several different articles. Absorption may also be arranged by installing grilles in the surfaces of an auditorium through which sound may pass. These grilles eliminate reflection and reduce echoes in critical cases, but they should be backed by spaces containing absorbing material.

Consider now certain types of church auditoriums that have special features. Take the case of a cathedral. The size of the cathedral nave is usually so great that the voice of an ordinary speaker is practically lost, and the resultant sound is not loud enough for easy hearing. Music, on the other hand, is more satisfactory because of its greater energy. The ceiling areas are likely to be curved, but they are usually so high above the floor that the concentration of sound will not affect the hearers. It is quite likely, though, that echoes will be set up by more than one reflection of sound, so that a special geometrical study of the walls should be made to anticipate any marked defects. The plan of the area, usually in the form of a cross, limits the possibilities for locating a speaker and congregation for convenient hearing. An elevated pulpit and a sounding board of suitable shape may aid the speaker to some extent by reflecting his speech as directly and effectively as possible to the auditors, but the conditions are not nearly as advantageous as in a smaller interior with a controlled shape.

Christian Science churches furnish a particular form of auditorium which is usually circular in horizontal cross-section, with a dome. Speaking takes place not only from the platform but also by members of the congregation from any point on the floor. This produces conditions very likely to form echoes, because the curved side walls and the dome concentrate the reflected sounds. An effective safeguard would be to use a flattened dome surface with the radius of curvature more than twice the ceiling height. The curved effect is thus maintained and may be accentuated by circular rows of coffers. The focusing effect of the side walls may be reduced either by hanging curtains in front of them or by making them plane surfaces which will be sections of a hexagon or other regular figure. Part of the absorbing materials needed to reduce the reverberation should be placed on the ceiling surface. Other details of arrangement would be decided after a study of the auditorium in question.

Gothic ceilings usually produce good acoustic effects. Sound carries easily from the pulpit to the rear of the church. Installing absorbing material on the ceiling surfaces reduces possibilities of echoes and acts as an effective absorbent. See Fig. 8. Street noises are sometimes objectionable, and these may be avoided to some extent by means of an entrance lobby quieted by absorbing material. Outside disturbances are then prevented from reaching the auditors, first by the outside doors, then by the quiet lobby, and finally by the swinging doors to the auditorium. Upholstered seats or pew cushions have the advantage that they make the space partly independent of the congregation. Auditors absorb much sound because of the clothing worn. On occupying seats, they substitute the absorption of their clothing for that of the cushions or upholstery, and thus tend to keep the absorption of sound constant. Music or speaking in such a room is much the same whether a congregation is present or not.

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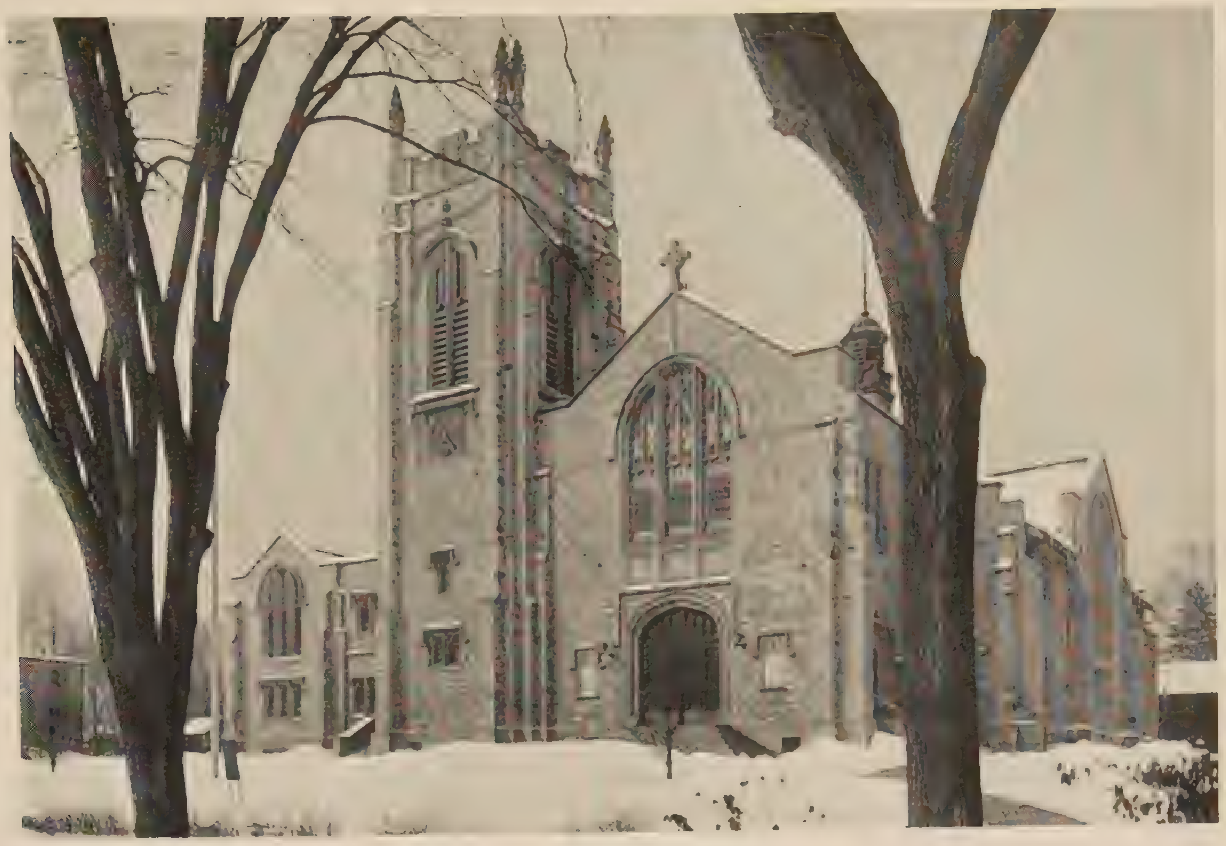
*

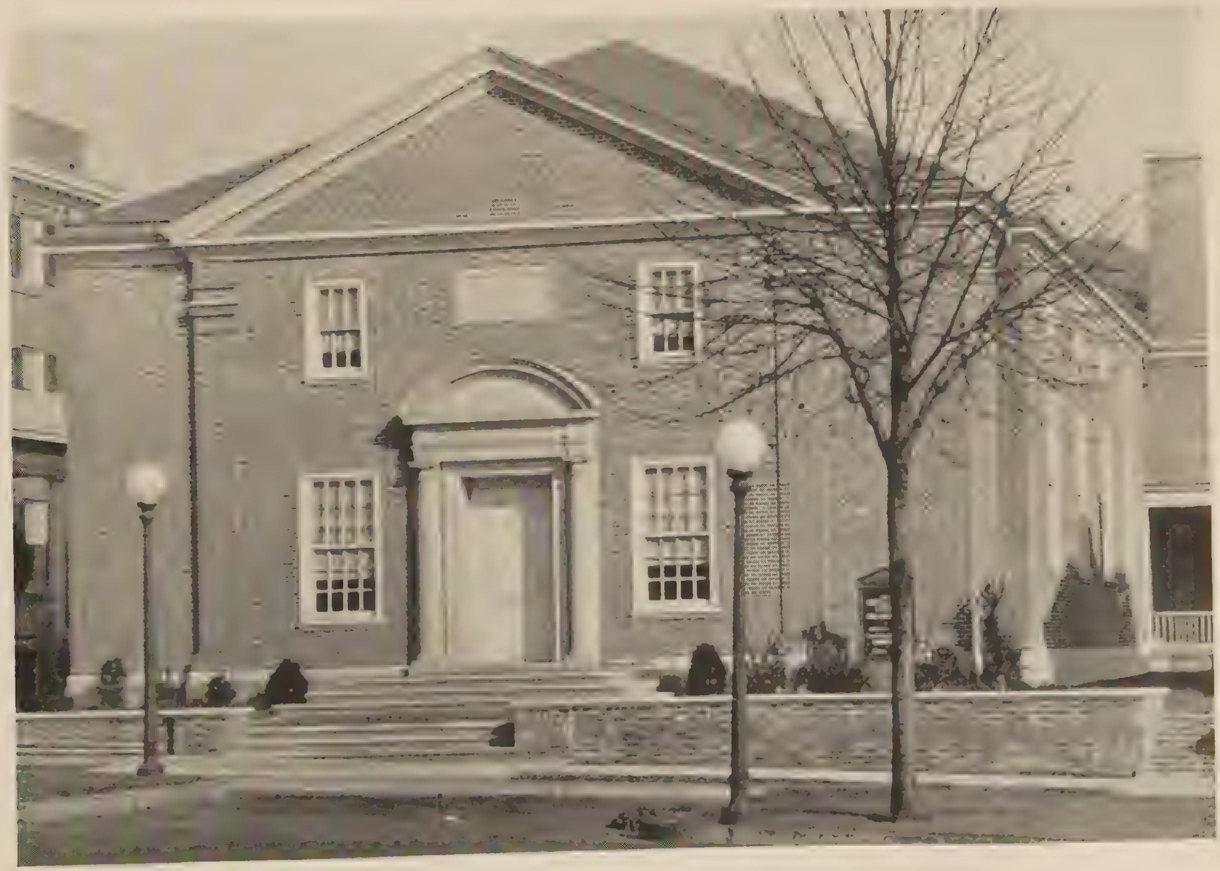
Material	Area		Coefficient		Total Units
Cork floor	4560 sq. ft.	×	.03	=	137.
Stone walls	9360 " "	×	.019	=	178.
Glass windows	4465 " "	×	.025	=	112.
Woodwork	5679 " "	×	.061	=	346.
Plaster	2057 " "	×	.025	=	51.
Seats	700 " "	×	.1	=	70.
a = total units, empty auditorium					894.

235 auditors (1/3 audience) × 4.6 = 1080 + 894 = 1974

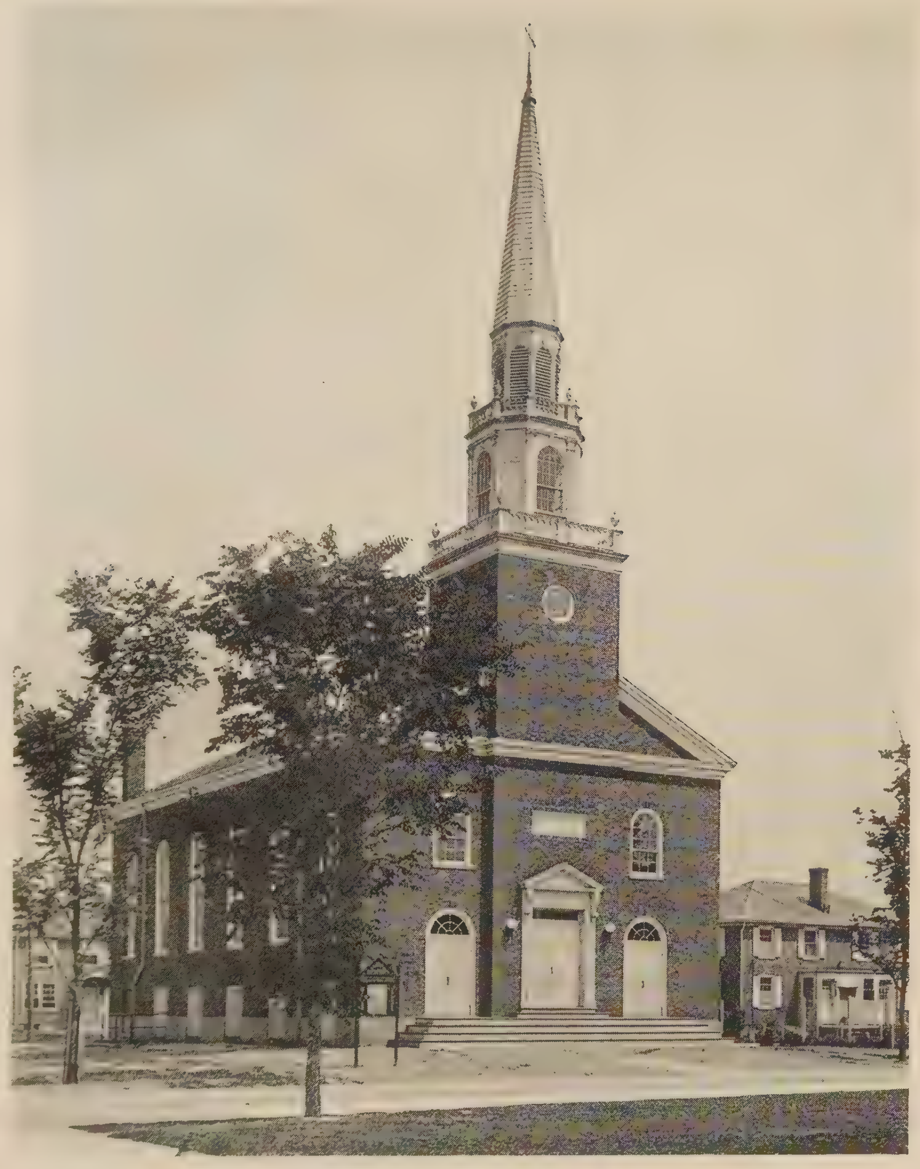
700 auditors (max. audience) × 4.6 = 3220 + 894 = 4114



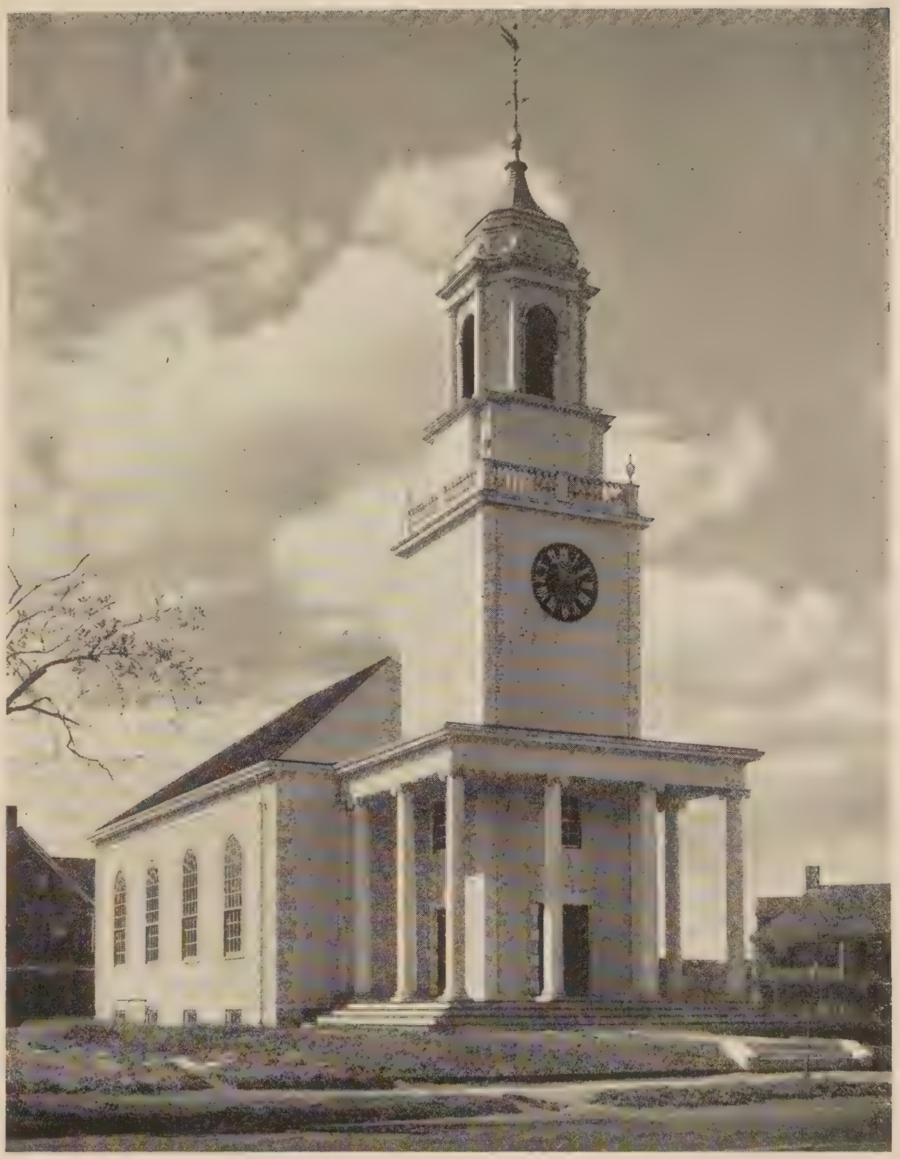
FIRST M. E. CHURCH, WESTFIELD, N. J.
J. F. JACKSON, ARCHITECT



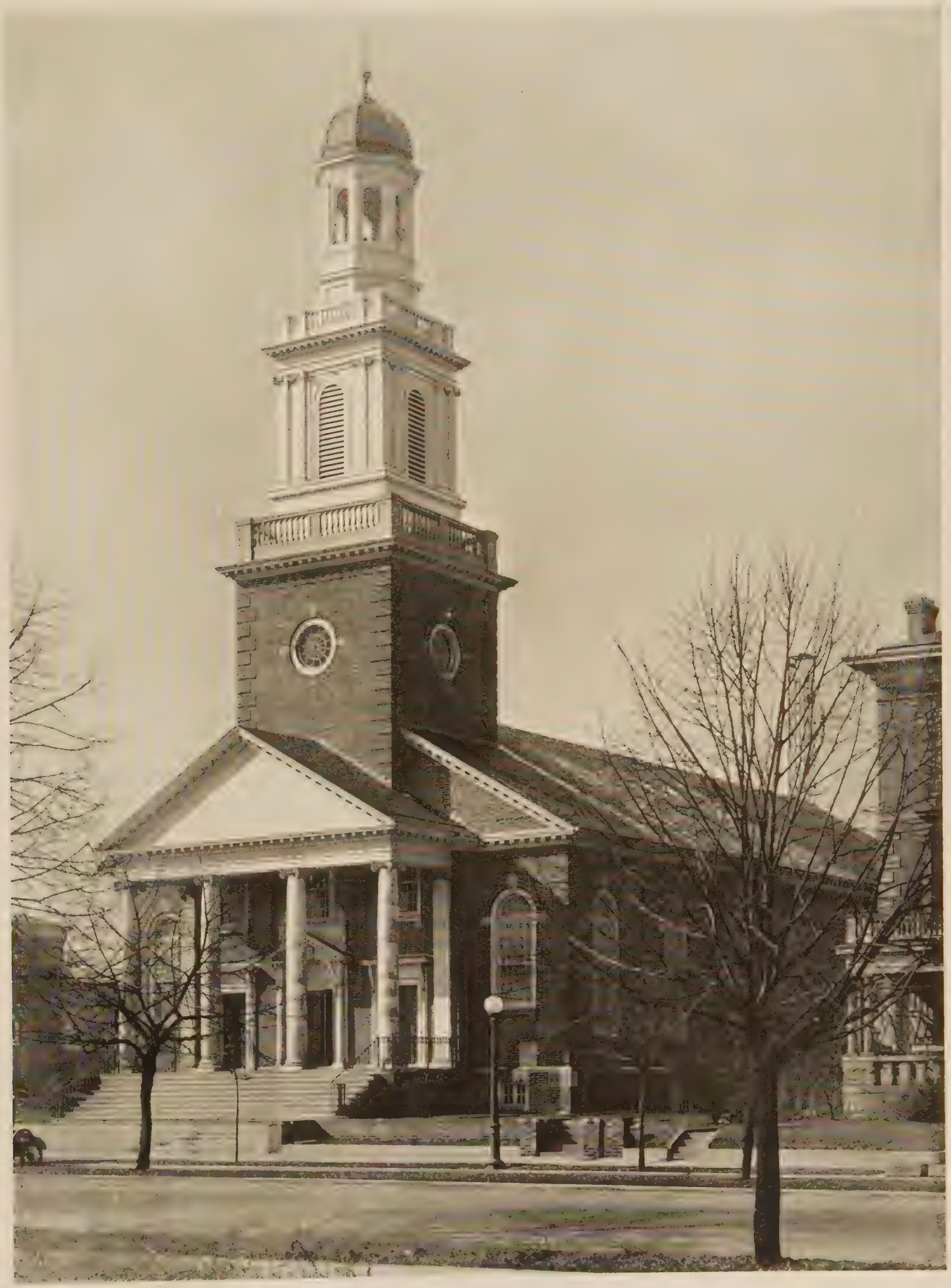
FRIENDS' MEETING HOUSE, BALTIMORE
EDWARD L. PALMER, JR., ARCHITECT



BAPTIST CHURCH, YORKSHIP VILLAGE, N. J.
ELECTUS D. LITCHFIELD & ROGERS, ARCHITECTS



CALVARY M. E. CHURCH, ARLINGTON, MASS.
JAMES H. MAC NAUGHTON, ARCHITECT

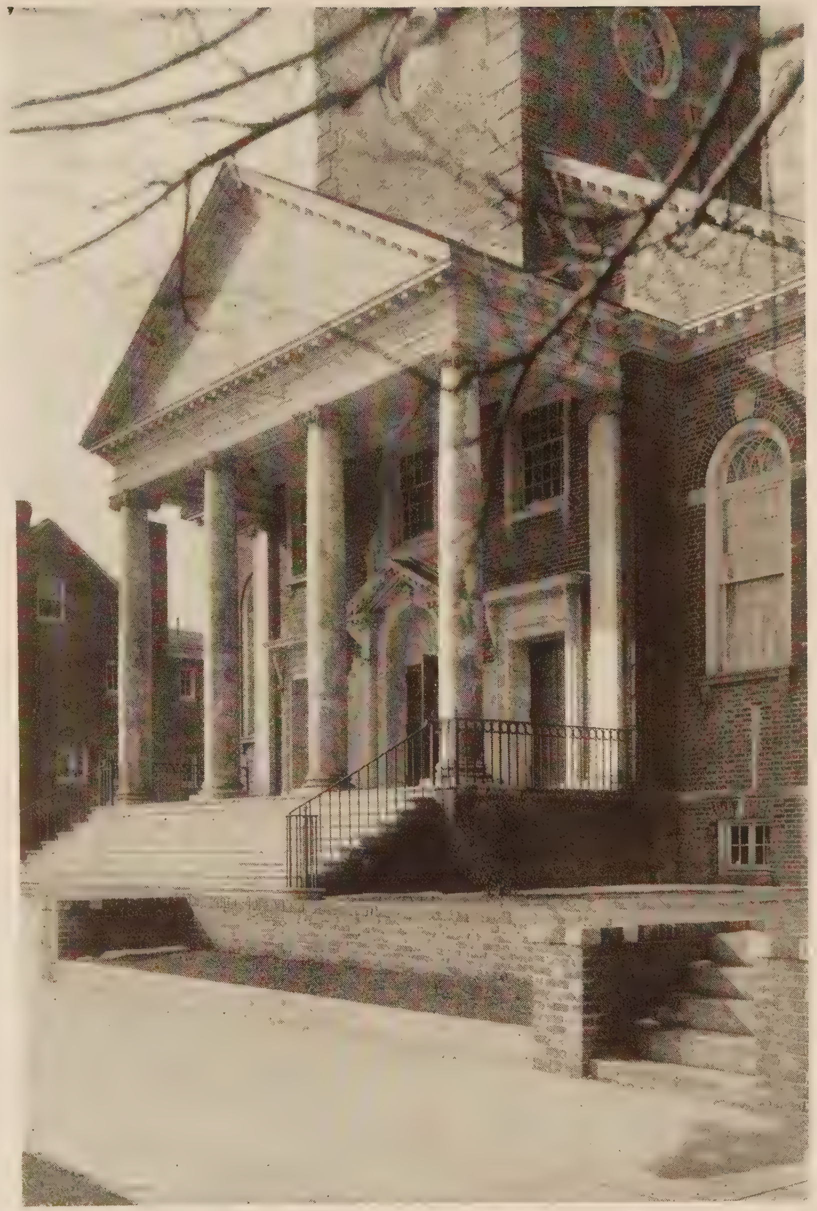


ST. MARK'S CHURCH, RICHMOND, VA.
BASKERVILLE & LAMBERT, ARCHITECTS

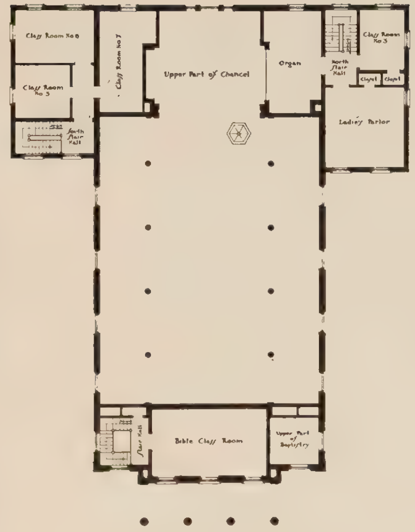
Photos. Tebbs

PLANNING of this church was done in the spirit of the later and more luxurious of the Colonial churches, a number of which still exist in the older cities of the Atlantic seaboard.

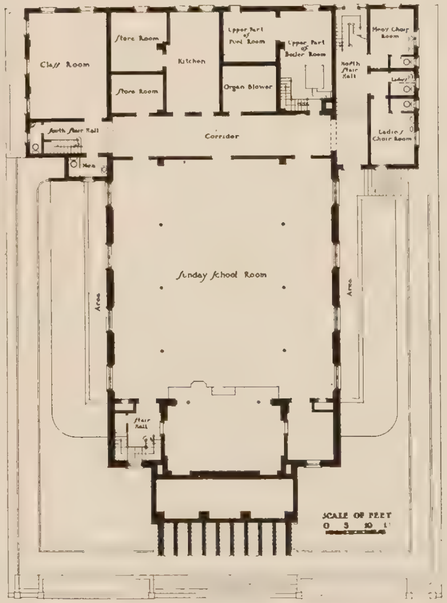
The plan is similar to that of several of the earlier churches,—nave divided from aisles by columns which support the ceiling, flat over the aisles and barrel vaulted over the nave. Detail of the interior is somewhat richer than that used without and is of wood, painted excepting for such details as the pews and the handrail to the pulpit which are mahogany in natural finish. As is correct in a church of this type the windows are filled not with stained or painted glass but with glass which is clear or transparent and in fairly small panes. The Colonial character of the interior is considerably heightened by the use of a Palladian window above the altar and of a suspended sounding-board over the pulpit. Here the Sunday School department is in a well lighted basement, with some of the classrooms on the main floor.



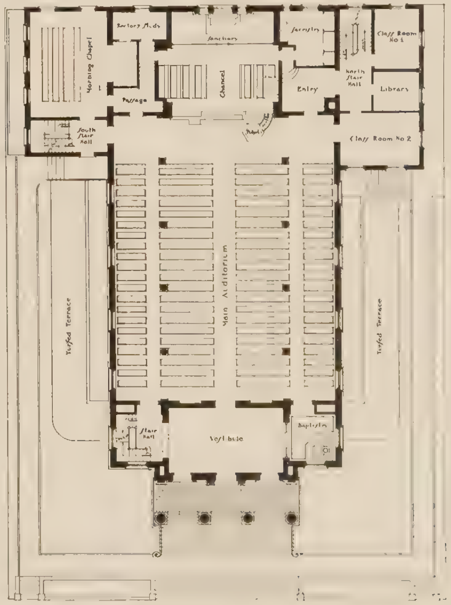
VIEW OF ENTRANCE PORTICO



SECOND FLOOR PLAN

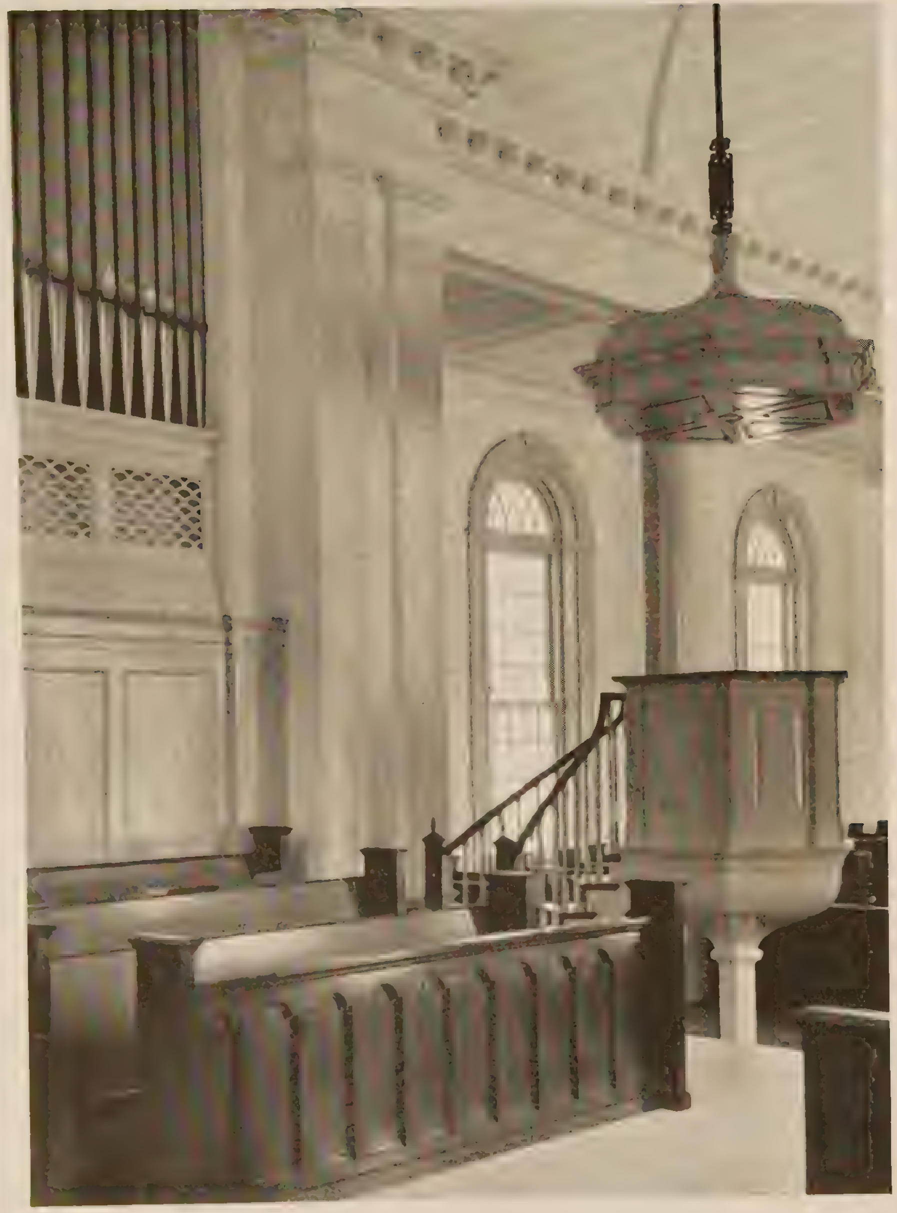


BASEMENT PLAN

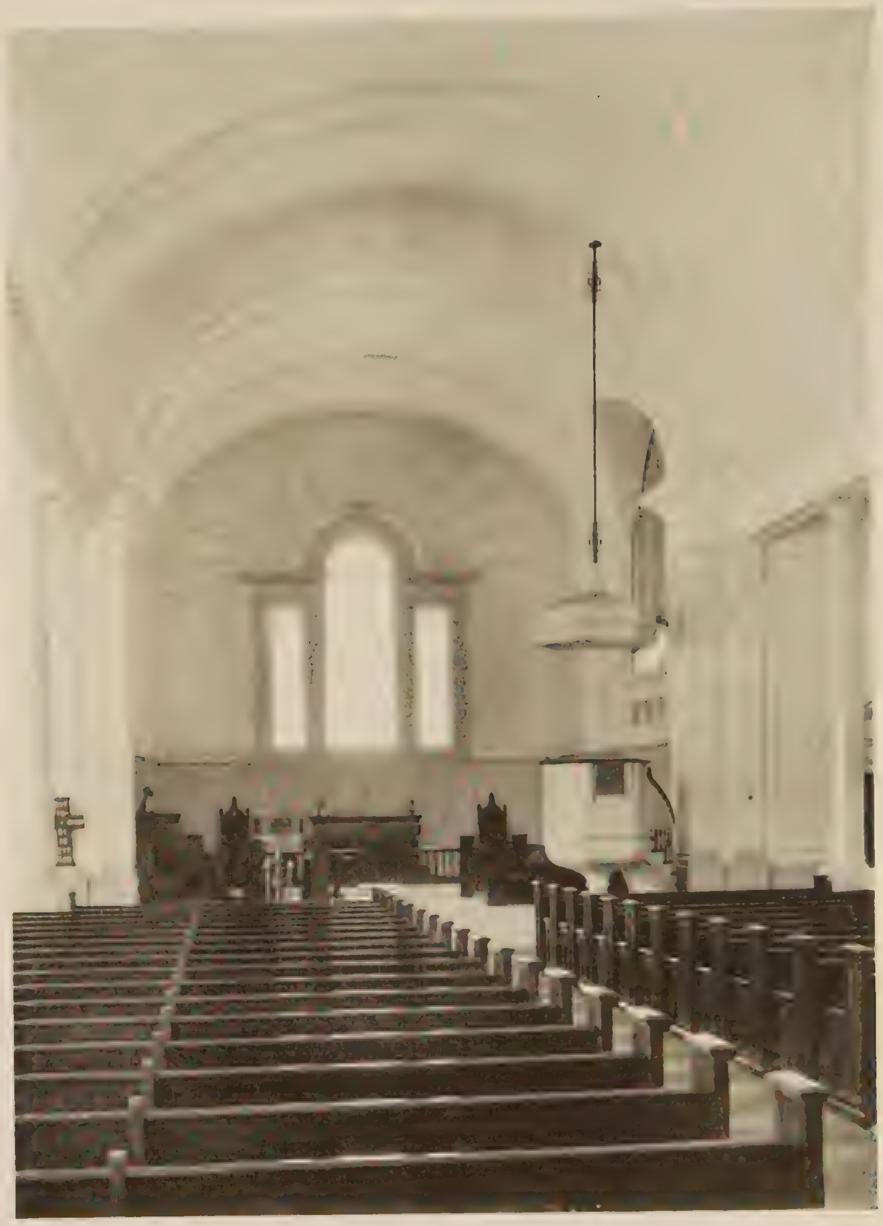


MAIN FLOOR PLAN

ST. MARK'S CHURCH, RICHMOND, VA.
BASKERVILLE & LAMBERT, ARCHITECTS

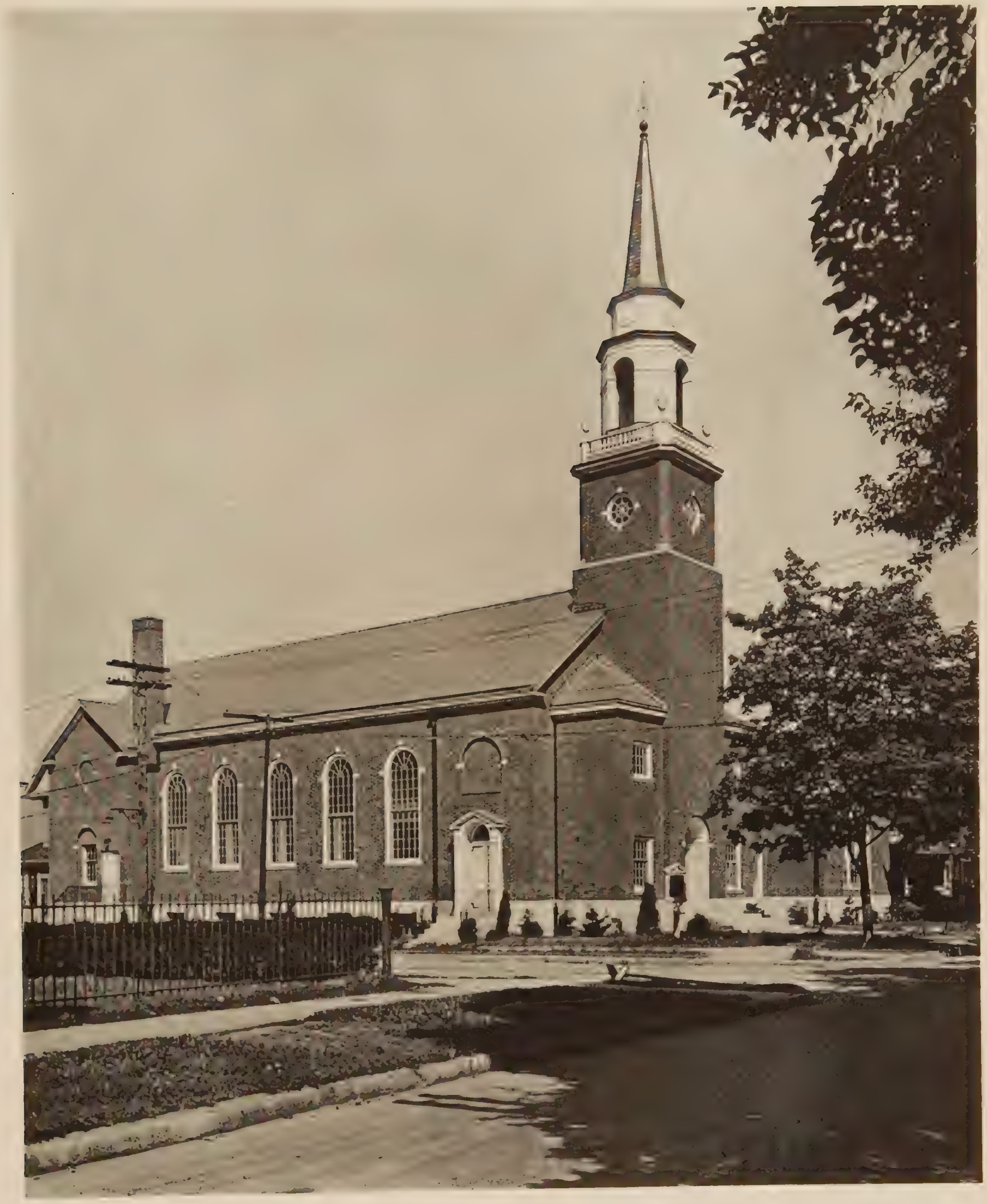


VIEW OF CHOIR AND PULPIT



INTERIOR, LOOKING TOWARD SANCTUARY

ST. MARK'S CHURCH, RICHMOND, VA.
BASKERVILLE & LAMBERT, ARCHITECTS

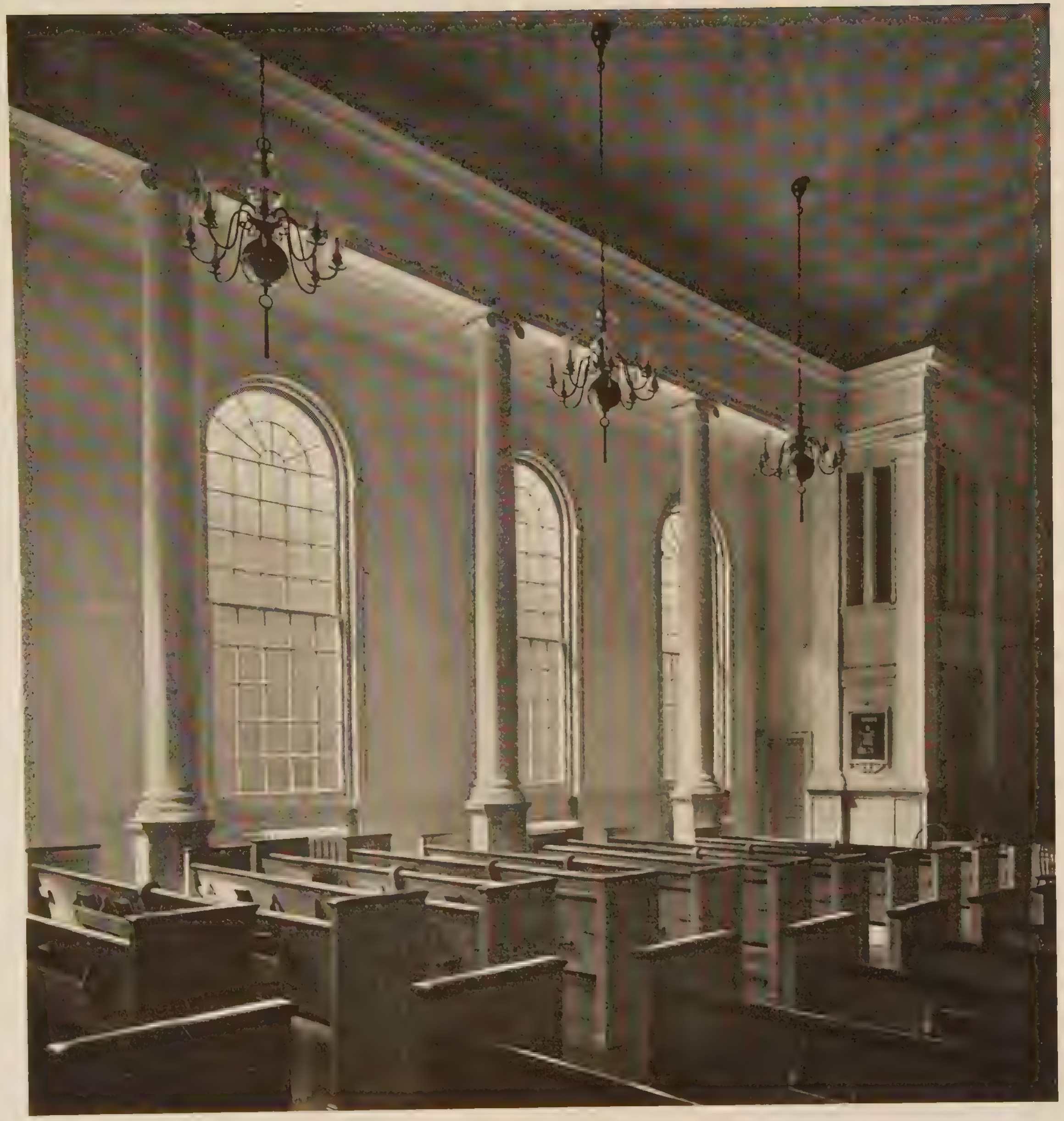


THE design of this building was based on Colonial tradition, but adapted to the needs of a present-day Baptist congregation requiring considerable equipment for educational and social purposes. Main auditorium used for general assembly of Sunday School; classrooms opening from auditorium for individual instruction. Readily accessible from narthex are rooms for a men's club, a large room for meetings and dinners, a room for boys, and shower baths and bowling alleys. Exterior of building brick and limestone, with trimming of wood, painted. Cost of building $96,000 or about 32 cents per cubic foot.

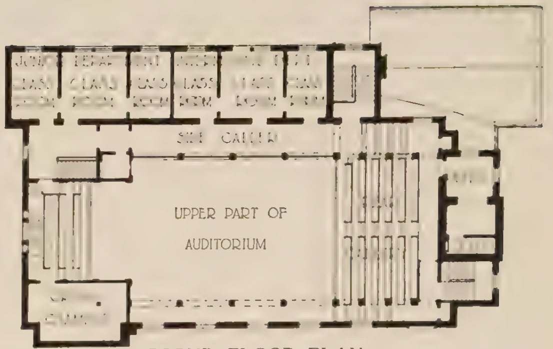
FIRST BAPTIST CHURCH, JAMAICA, N. Y.

JOSEPH HUDNUT, ARCHITECT; W. E. MANHART, ASSOCIATE

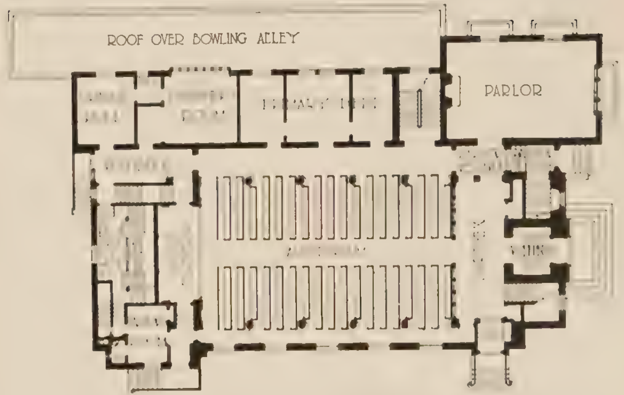
Photos. John Wallace Gillies



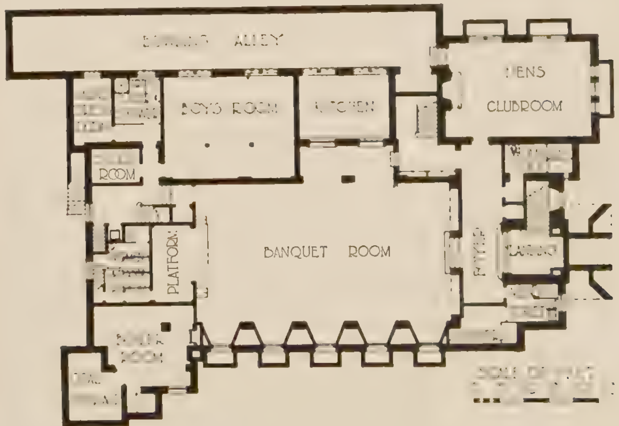
VIEW OF NORTH AISLE



SECOND FLOOR PLAN

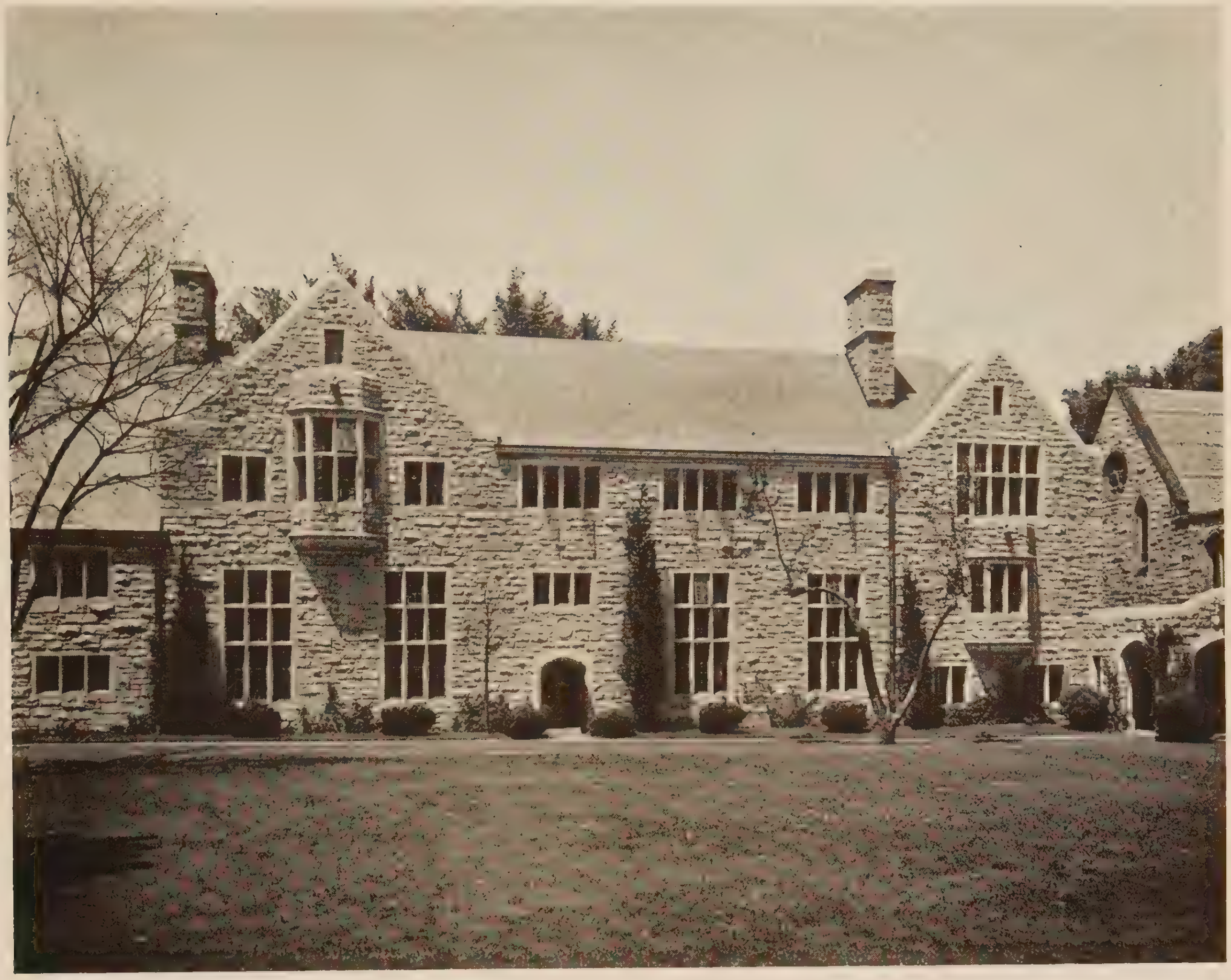


MAIN FLOOR PLAN



BASEMENT PLAN

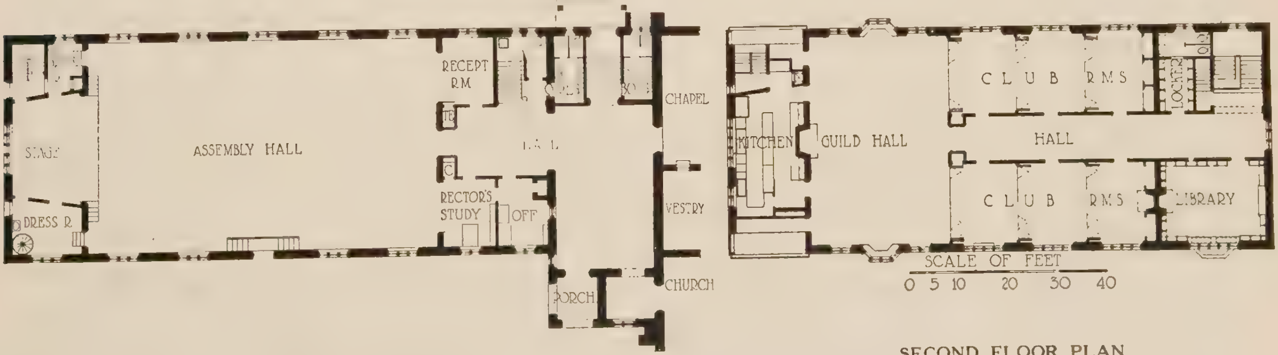
FIRST BAPTIST CHURCH, JAMAICA, N. Y.
JOSEPH HUDNUT, ARCHITECT; W. E. MANHART, ASSOCIATE



GENERAL VIEW OF BUILDING

THE material used for the exterior of this building as well as its general style was determined by the necessity of securing architectural agreement between the existing church building and the newer structure which adjoins. It was desired that the church house supply facilities for parish work of a somewhat broad and varied nature, with ample equipment for the meetings of guilds and also for activities which are likely to involve the participation of large numbers of people.

All of these activities have been provided for; the upper floor of the church house contains two suites of three club rooms each, which on occasion are easily made into one large room, while both of the suites open into a large guild hall which is provided with kitchen and serving pantry. Upon the ground floor there is a spacious assembly room with an entrance directly from without as well as from the hall between the church and the church house. This assembly hall is equipped with every convenience, including stage and dressing rooms. The building also makes provision for a parish library, and what is particularly to be noted is the suite of offices in the church house for the rector or the members of his staff who supervise its activities. The interiors are dignified while possessing at the same time an appropriately domestic character, and finish is in keeping with the purposes of the building.

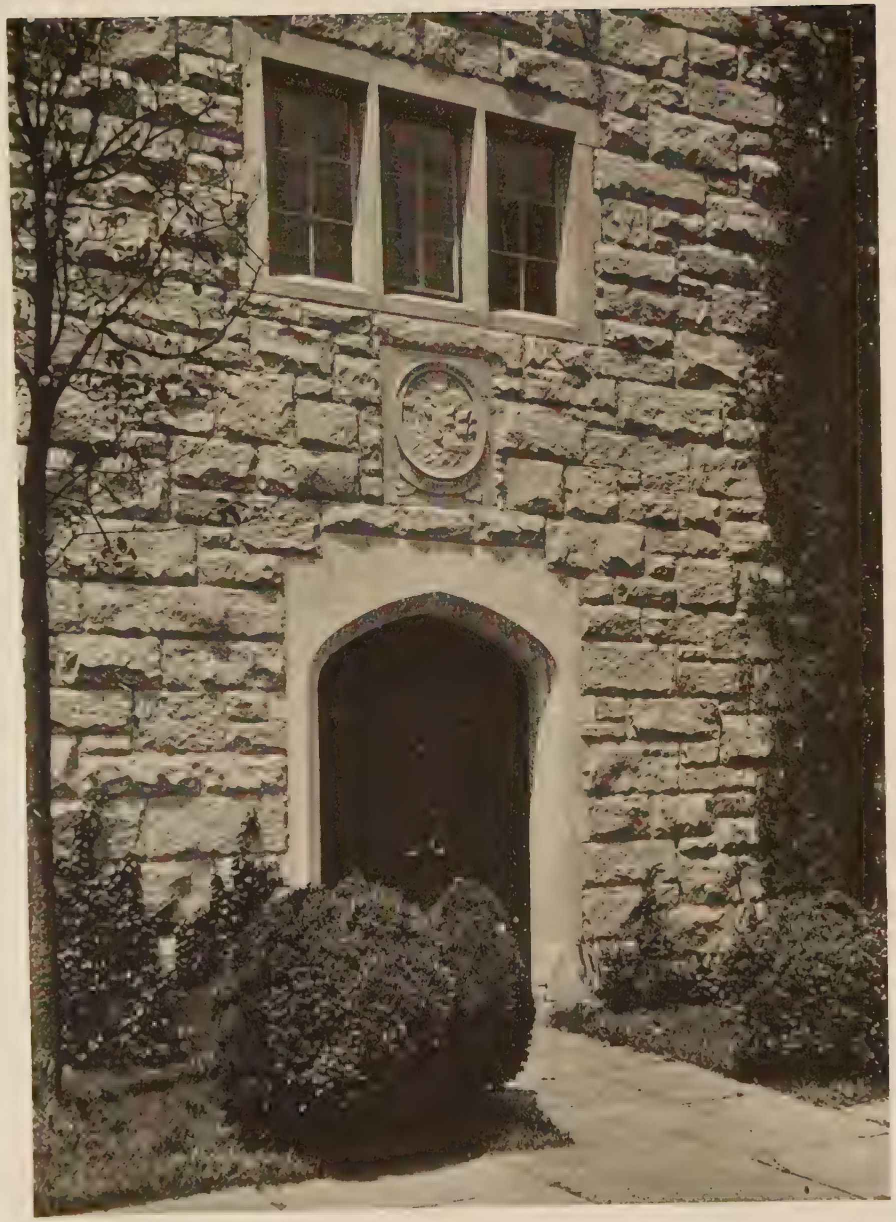


FIRST FLOOR PLAN

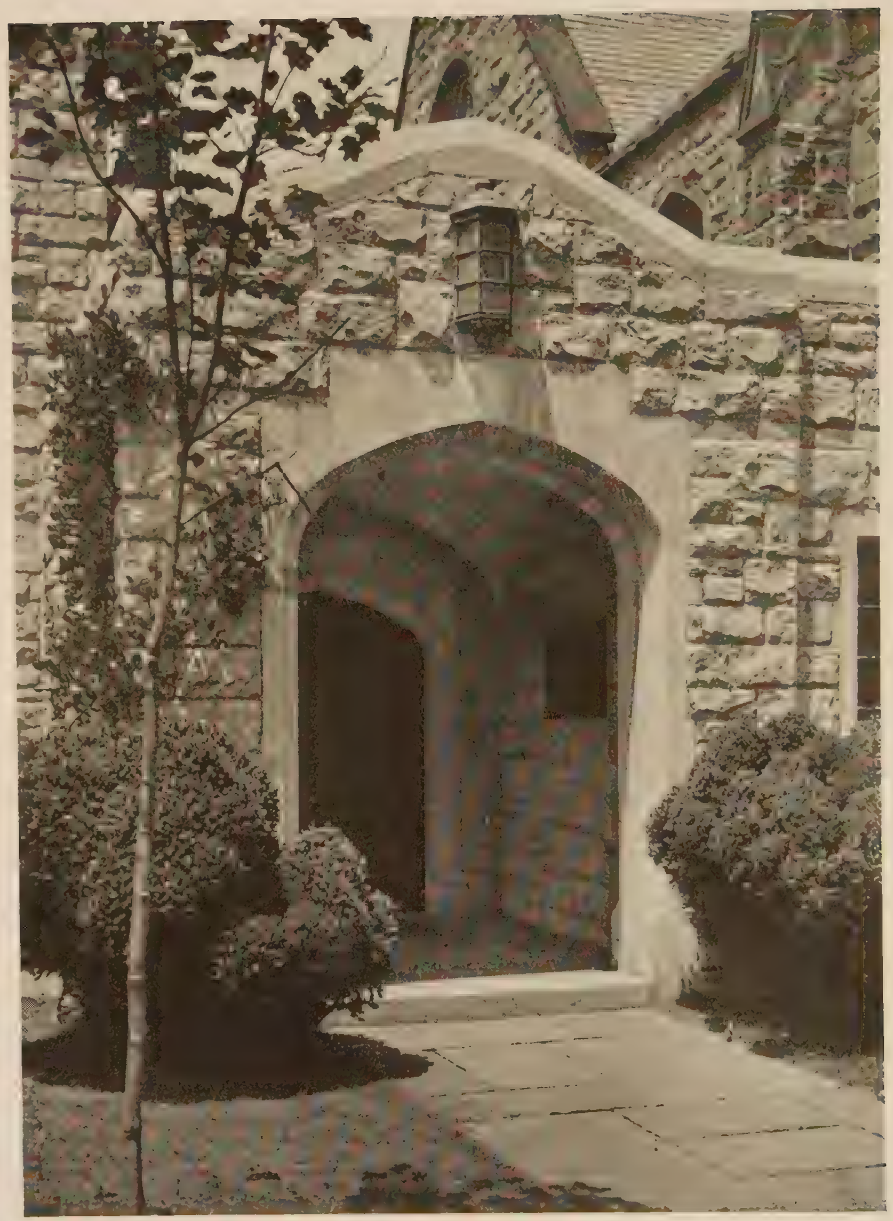
SECOND FLOOR PLAN

CHURCH HOUSE, ST. JOHN'S CHURCH, WATERBURY, CONN.

RICHARD H. DANA, JR., ARCHITECT



ENTRANCE TO ASSEMBLY HALL

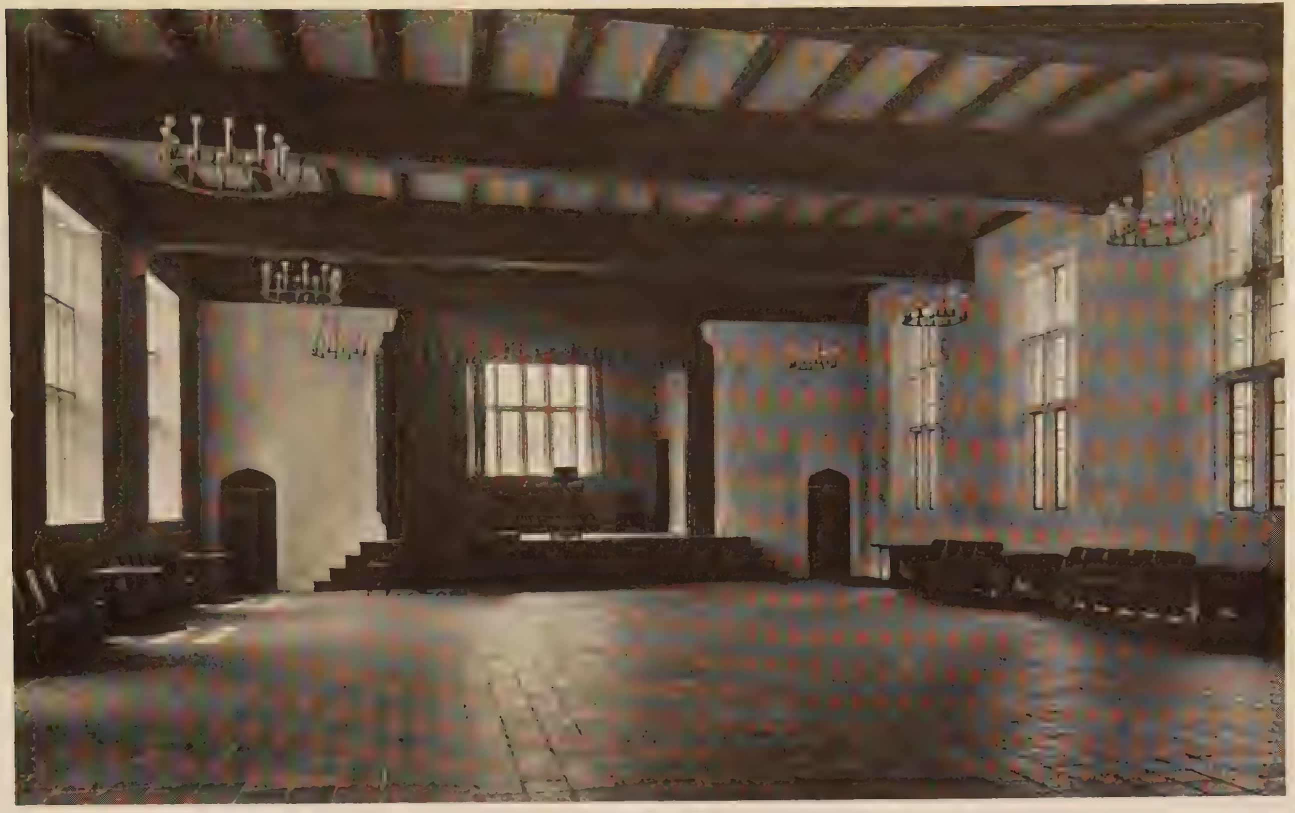


DETAIL OF MAIN ENTRANCE

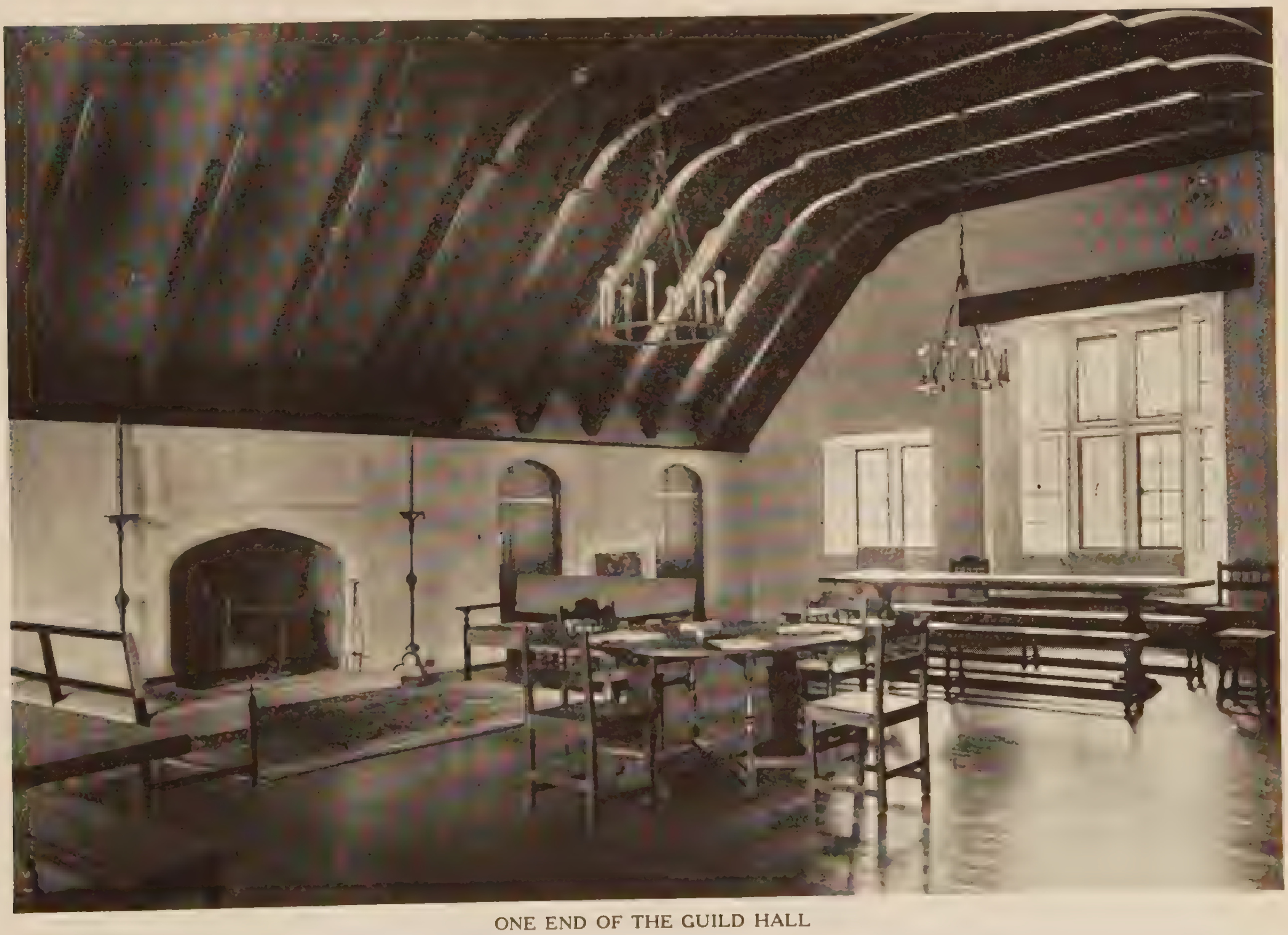
CHURCH HOUSE, ST. JOHN'S CHURCH, WATERBURY, CONN.

RICHARD H. DANA, JR., ARCHITECT

Photos. Kenneth Clark



VIEW OF ASSEMBLY HALL, FACING STAGE



ONE END OF THE GUILD HALL

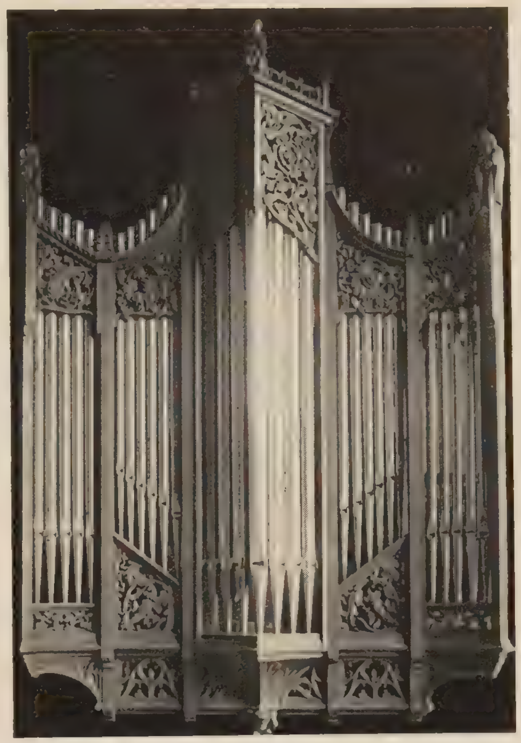
CHURCH HOUSE, ST. JOHN'S CHURCH, WATERBURY, CONN.

RICHARD H. DANA, JR., ARCHITECT

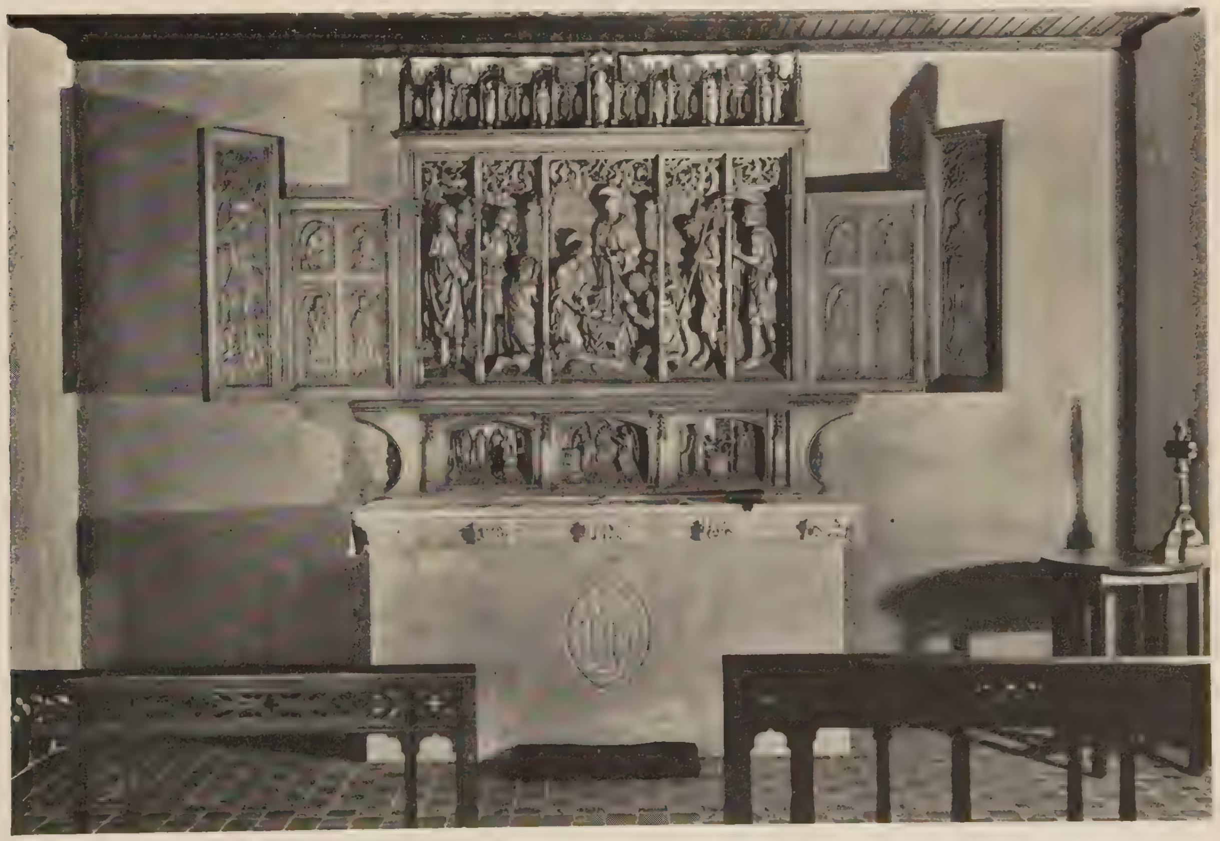
Recent Altars and Other Accessories

THE triumphs of Gothic art or of art in general, and particularly of architecture, cannot be said to belong exclusively to any one era or any one country. The mediæval period in Europe saw, it is true, a marvelous flowering of ecclesiastical art of every kind, but the flowering was not wholly spontaneous but was rather called into being by a demand for its masterpieces and by the encouragement which such a demand presupposed. The arts which serve religion were for almost a century to a great extent overlooked or ignored, but architects and workers in the various crafts are once more receiving encouragement and patronage which have led to a revival of these arts. While architects have been absorbed with study of design and structure, artisans of every kind have been acquiring anew the skill of the craftsmen of long ago and, stimulated by an ever-growing appreciation on the part of patrons, have already produced work which would have done credit to workers of earlier centuries and other lands. While preëminently true of stained glass, which demands discussion all its own, it is particularly true of such arts as metal working and carving, whether in stone or wood.

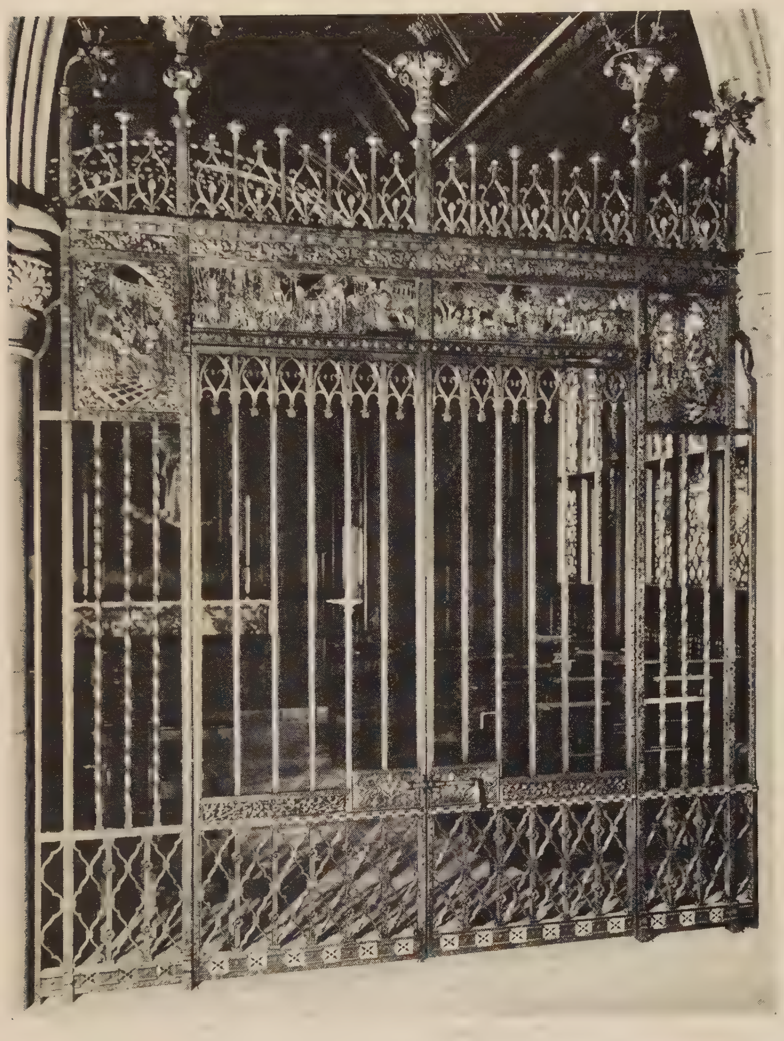
In and around New York, among many examples of excellent work which has been done within the past few years, there are several examples of church accessories in wood carving or metalwork which are notable. Among them are the triptych at St. Paul's, Flatbush, and



Organ Case, Emmanuel Church, Baltimore
Woldemar H. Ritter, Architect



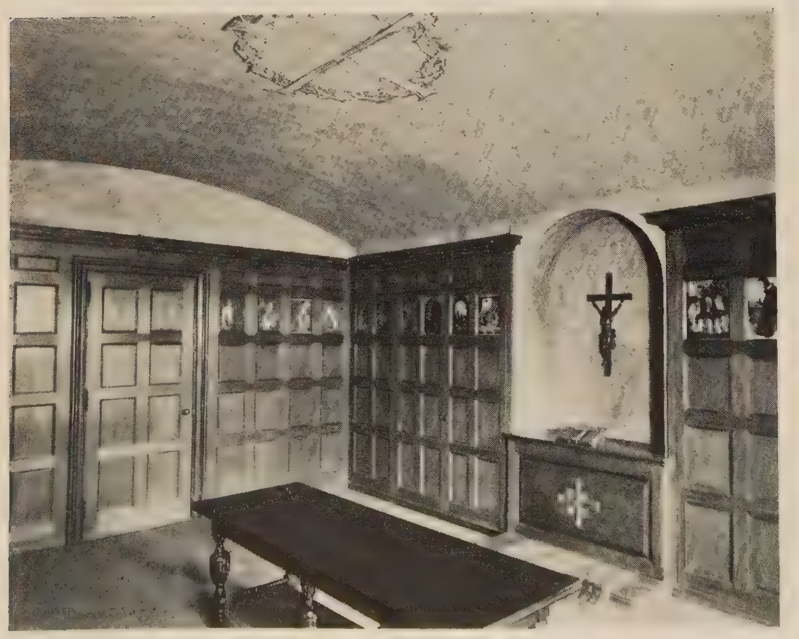
Altar in Chapel of Remembrance, Church of St. Michael and All Angels, Baltimore
Woldemar H. Ritter, Architect



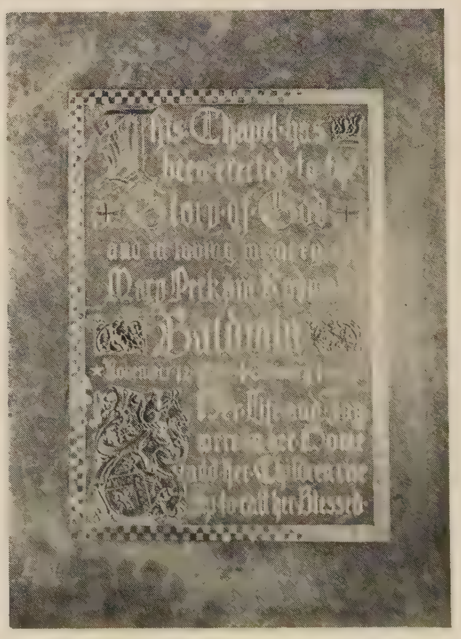
Iron Grille, Grace and St. Peter's Church, Baltimore
Woldemar H. Ritter, Architect

the arrangement of the main altar at St. Luke's Chapel, Hudson Street, of which Wilfred E. Anthony is architect. The triptych is a beautiful example of this ancient form of over-altar treatment, and its ornament of painting, carving, coloring and gilding is so disposed that when the triptych is closed, during the penitential seasons of Advent and Lent, it is only a little less rich and glorious than at other times when its full splendor is revealed. The altar at St. Luke's is arranged with a low reredos with riddels, the riddel posts being of a very correct and beautiful character and the hangings themselves laced to the supports in true Gothic fashion. The altar proper is admirably arranged, the cross and candlesticks resting directly on the *mensa,* and the altar covered with undecorated linen. Among the most notable examples of metalwork made within recent years are the grilles which divide several chapels from the nave at the Church of St. Vincent Ferrer, New York, of which Bertram Grosvenor Goodhue is architect, and the tabernacle of metal and enamel upon the high altar which was also designed in Mr. Goodhue's office.

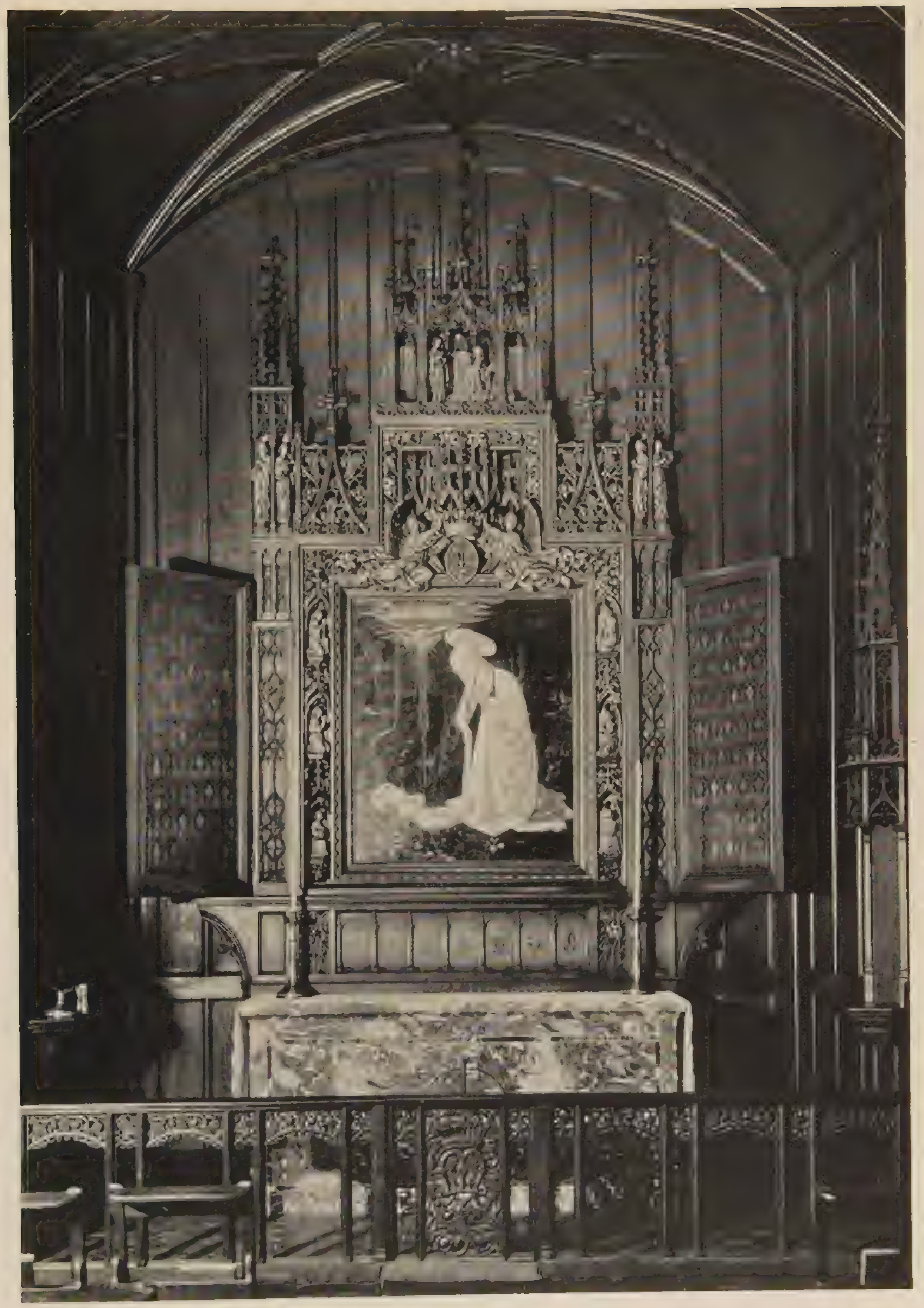
The altar at St. John's, Newport, of which Cram & Ferguson are architects, while already fairly well known, is included here because it ranks as a superlatively rich and beautiful example of craftsmanship of several



Sacristy, Emmanuel Church, Baltimore
Woldemar H. Ritter, Architect

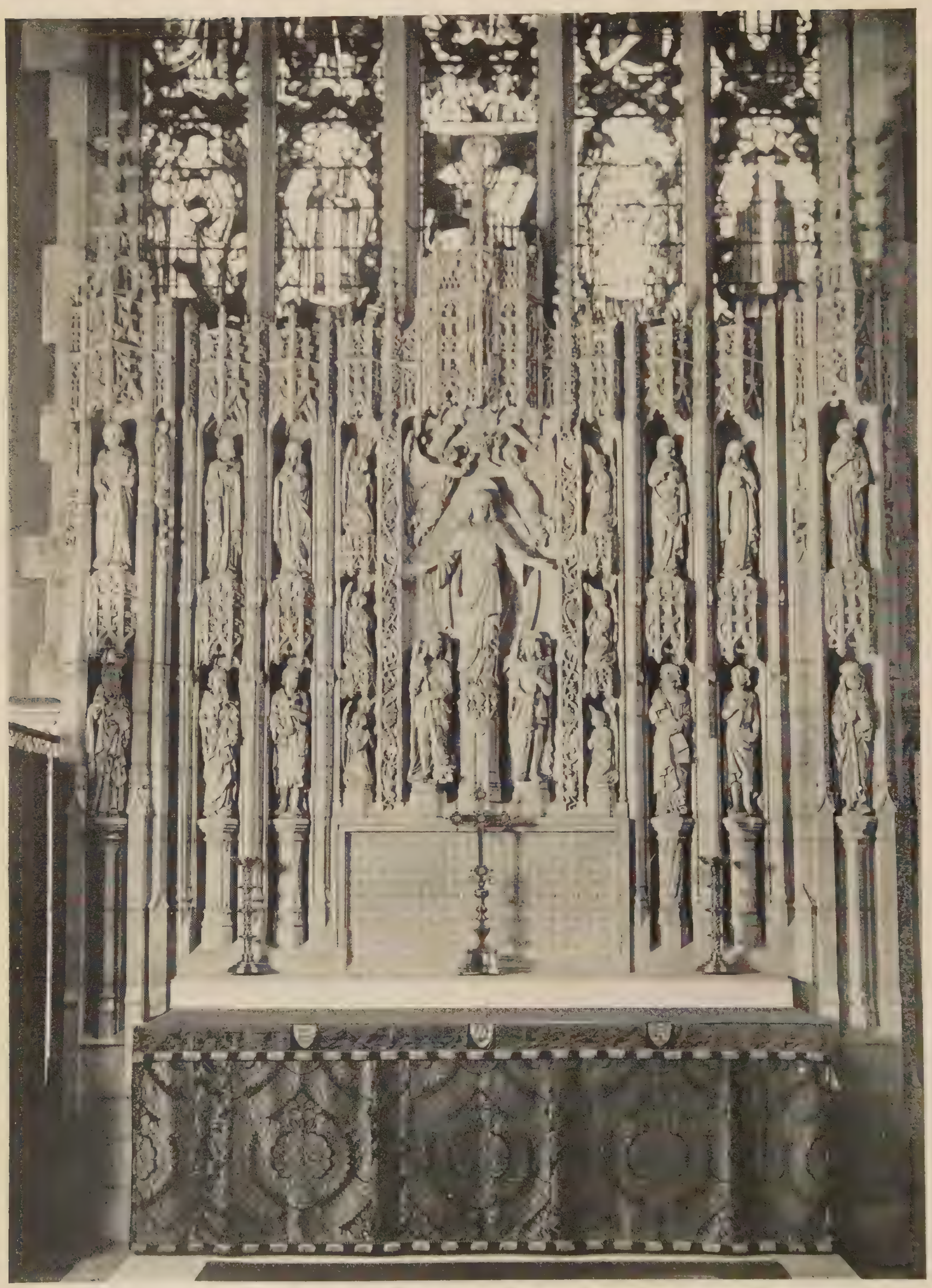


Memorial Tablet in Floor of Chapel
Woldemar H. Ritter, Architect

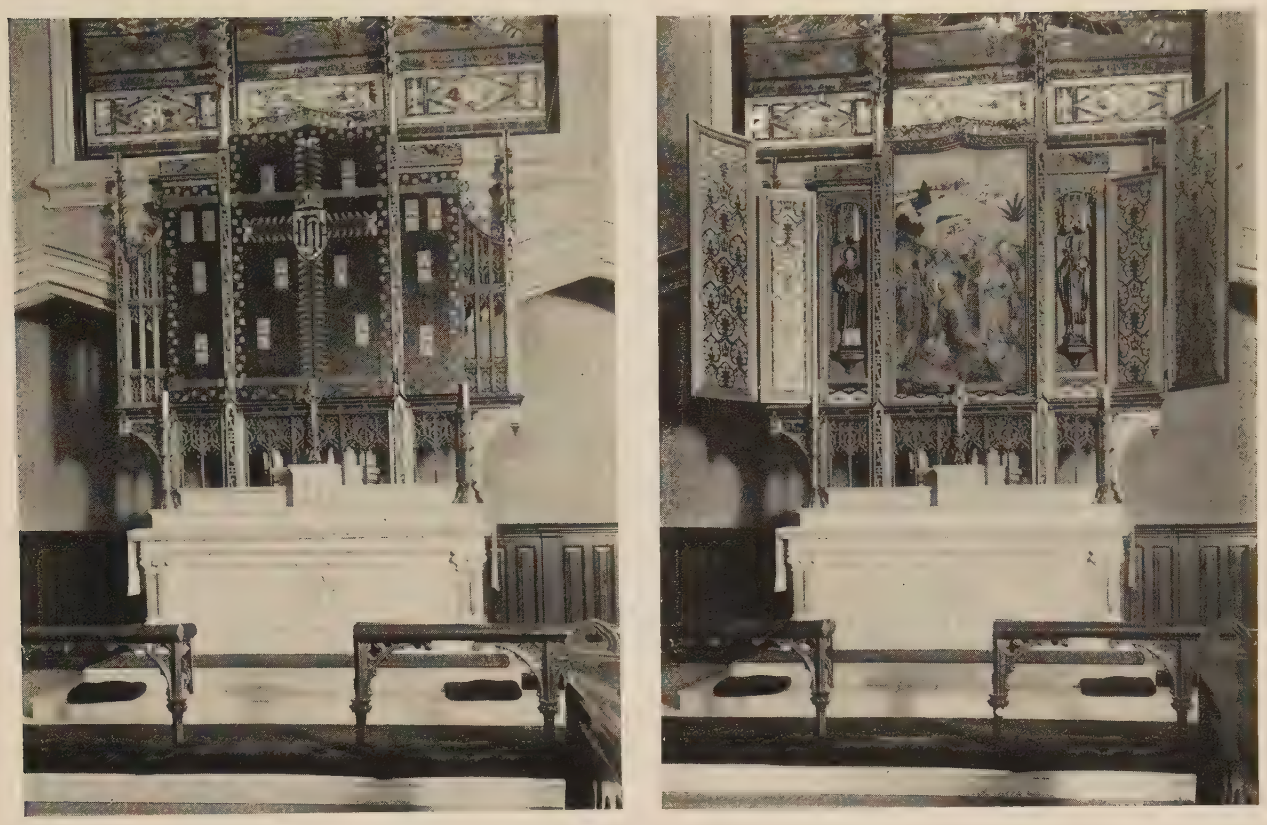


ALTAR AND REREDOS IN LADY CHAPEL, GRACE AND ST. PETER'S CHURCH, BALTIMORE

WOLDEMAR H. RITTER, ARCHITECT



ALTAR OF EMMANUEL CHURCH, BALTIMORE
WOLDEMAR H. RITTER, ARCHITECT



Triptych Closed During Advent and Lent

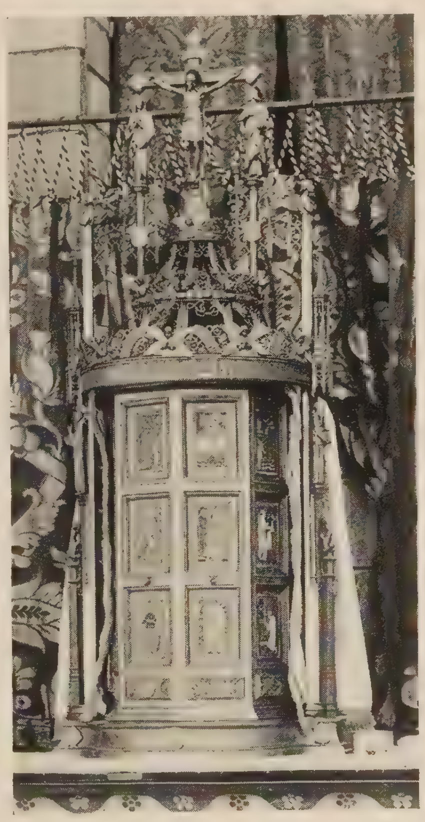
Wings Opened at Other Times

Altarpiece in Form of a Triptych, St. Paul's Church, Flatbush, New York

Wilfred E. Anthony, Architect

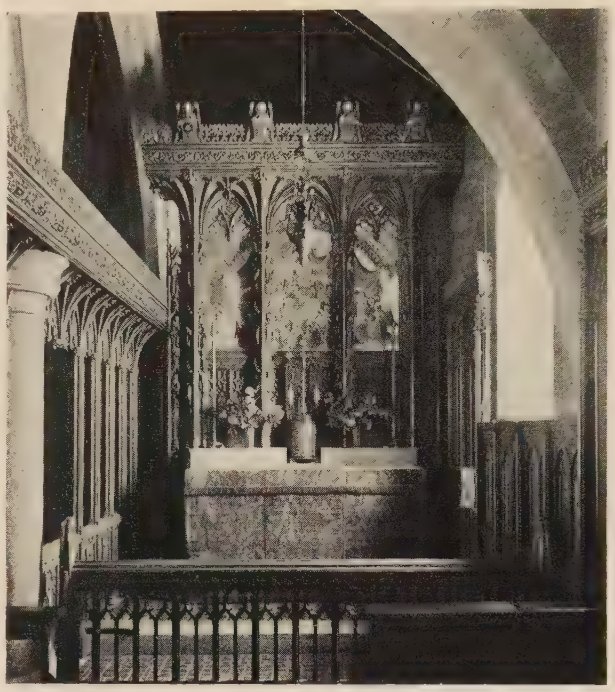
kinds. Its carving is among the best examples of modern work, and its tabernacle of metal and enamel is equal in importance to the carving which surrounds it. The painting is by a member of one of the religious orders of the Episcopal Church.

In Baltimore there are numerous examples of excellent craftsmanship designed by Woldemar H. Ritter, from which have been selected a few of the more important examples. The altar in the Chapel of Remembrance in the Church of St. Michael and All Angels is a splendid example of appreciation of carefully studied proportions. The relation of the mass of the plain, rectangular marble altar to the richly carved and ornamented triptych above is most successful. In the very low relief of the carved paneled doors of the triptych a pleasant contrast with the high relief of the carved Nativity is obtained, thus attracting the eye to the primary focal point of the whole composition as to its true center.

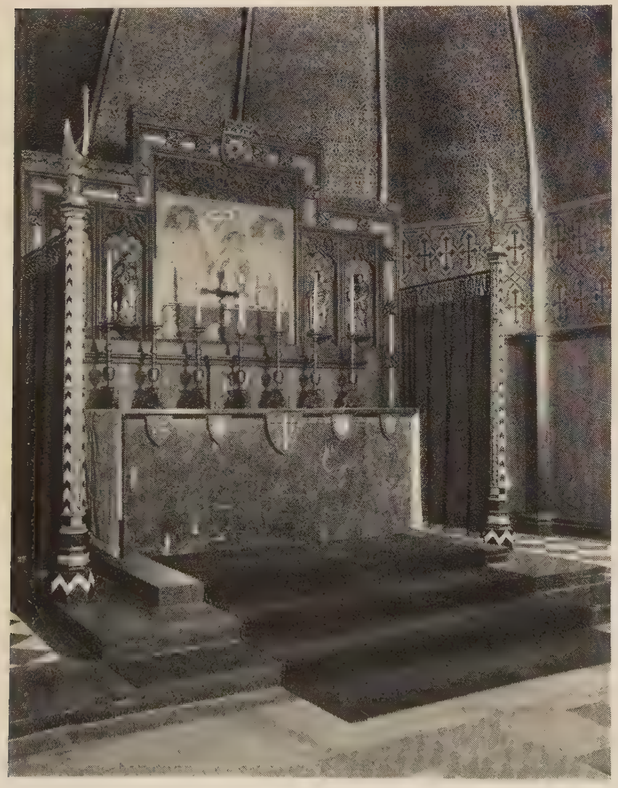


Tabernacle of High Altar
St. Vincent Ferrer's, New York
Bertram Grosvenor Goodhue, Architect

In Emmanuel Church Mr. Ritter has taken unusual care in the design and details of the sacristy. Walls paneled in dark oak make a pleasing contrast with the slightly curved rough plaster ceiling. The paneling forms the concealed doors of the vestment cases. One wall is broken successfully by a small recessed altar of pleasing simplicity and proportions. This fortunate note of religious significance, as well as the delicately modeled ceiling decoration of cross and crown of thorns, gives to this small room a dignity and distinction indicative of its purpose. His design for the organ case in this church is simple in composition, but rich in well balanced and carefully placed decoration. The hood of the projecting bank of trumpets and the balancing banks of horns are ornamented with tracery elaborately carved in flowing floral scrolls of Gothic symbols suggestive of the passion flower and the fruits of the spirit. Grotesque figures holding musical instruments enrich the cresting and corner finials. As in the case of the altar designs, Mr. Ritter has again achieved a happy contrast and balance between the plain and the ornamented elements of the design. The reredos of Emmanuel Church is a carved design of sumptuous richness, executed in Indiana limestone, with a delicacy of detail recalling the elaborate fifteenth century examples at Winchester and Seville. Although smaller in size and lacking in color decoration, it suggests the gorgeous new reredos of St. Thomas' Church, New York. The rich brocade of the antependium gives a pleasing note of color below, repeated in the stained glass of the window above. The design is rich in repeated pedestals and elaborately canopied niches carrying figures of saints and angels, grouped about the central figure of Christ. These figures in stone are the work of that master wood carver of Boston, L. Kirchmayer. The present Gothic revival in this country has produced no craftsman who has contributed more to the beauty and perfection of ecclesiastical decoration than has this talented sculptor in wood and stone.


Reredos with Richly Carved Canopy
Altar in Chapel in St. John's Church, Newport
Cram & Ferguson, Architects

Between the chancel and the new lady chapel of Grace and St. Peter's Church, also in Baltimore, a wrought iron grille with gates, richly decorated in the manner of the fifteenth century, serves as a screen. Its dignity of design and balance of detail are very satisfying. Deference for the material used and understanding of its purpose characterize this ironwork. Deep horizontal panels of repeated quatrefoils form the base, balanced above a field of slender vertical bars by a richly decorated frieze of four pierced picture panels, surmounted by an ornate cresting divided by five important and floriated finials.


Altar at St. Luke's Chapel, New York
Reredos with riddels and gothic polychromed riddel posts
Wilfred E. Anthony, Architect

In this chapel the oak paneling of the altar niche forms a rich background for the brilliantly colored woodwork and painting of the triptych. The ample use of gold and color on the frame and doors of the triptych repeats in modified tones the colors of the painting which forms its central panel. This painting on wood is a magnificent copy of Filippo Lippi's "Adoration," executed by Elizabeth Born. The inner frame is almost completely covered with color, while the outer parts are only touched with it, gradually fading into the dark brown of the background. This transition from the clear and vivid color of the tempera painting of the Adoration to the rich shadows of the altar niche, draws the eye to the focal point of the chapel. This visual attraction to the altar is further enhanced by placing in the upper corner of the rear wall a window filled with amber glass which illuminates the painting of the Madonna and its brilliant triptych.

The floor of this chapel is of Vermont slate, in the center of which is set a unique dedicatory tablet. This tablet is an interesting example of the English type of Gothic inlaid metalwork. The tablet itself is slate into which are set the letters and decoration. Bronze and pewter have been used for the inscription, initials, name and decorations. The diaper pattern border is made of bronze into which are cast alternating squares of pewter. This use of several metals give a richness and variety of tone and color unobtainable from the use of one metal alone. It is the first example of the use of metals inlaid in slate produced in this country, a notable triumph of skill.

Church Furnishings

By E. DONALD ROBB

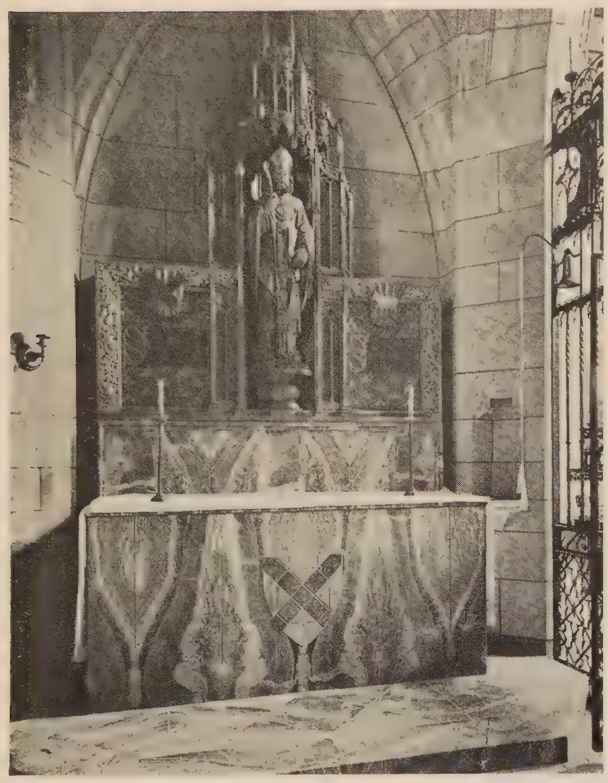
A DISCUSSION of church furnishings properly begins with a consideration of the altar or "God's Board," the one essential piece of furniture in the early Church, and today the most important of a score of pieces, large and small, used in the elaborate service of the ritualistic bodies of the Christian Church, and in many instances given the first place by many of those having less formal ideas on the subject of divine worship. Signs are plentiful in church circles to indicate that at no distant day the altar will be restored to its original place of preëminence, and its rivals, the trained quartette, the organ and the pulpit, will be relegated to their proper positions.

It is not the function of the architect, however, to engage in discussions ecclesiastical over the relative importance of articles of furniture, one to another. When this question has been settled by the churchmen, his clients, it is his duty to arrange each piece so as to produce architectural harmony. It is true that in any composition one thing must occupy the focal position; in a church interior this position is obviously at or near the end of the main axis. If, in this land of religious liberty, where clients are privileged to worship in accordance with the dictates of their own consciences, it has previously been decided, for instance, that the collection plate is the most important object used in the service of worship, then it is the business of the architect to plan accordingly. It is better to let conditions govern, provided they are not mere prejudices, than to force each set of requirements into an ancient mould where they will never be comfortable, and which, for all we know, may be outgrown. The architect may have his own opinions on such subjects, but he can best serve the client by working with him, not against him.

It is not at all imperative that a chancel be arranged after the custom established by the Episcopal or the Roman Catholic Churches in order to be dignified and, to a certain extent, solemn. Examples abound in the Colonial churches where effects of great dignity have been produced without following the mediæval arrangement. This is possible also in churches designed after the Gothic manner, although association seems to demand the deep chancel in this case. It is rarely possible to put the singers in the gallery across the east end of the chancel and have dignity as a result. The church will immediately take on the character of a concert hall—even the pulpit will sink into insignificance. Church music should be directed eastward, not westward.

Trinity Church, Princeton, N. J.
Cram, Goodhue & Ferguson, Architects

The first altars were of wood, probably very simple tables. The custom of using this material still survives in the Eastern Church, and continued in England until nearly the end of the eleventh century, when the Council of Winchester ordered the wooden altars throughout the realm to be demolished and altars of stone consecrated. These were originally severely plain, consisting of single slabs of freestone or marble incised with the five crosses, perhaps beveled on the lower edges and supported on pedestals, on four or five legs, or occasionally on stone brackets. The development from this simple form to the more elaborate types of the fifteenth century was steady, until the Reformation brought a return of the wooden table, when many of the old stone slabs were overthrown and broken, or used as paving stones. The use of wooden tables at this time, while common in the reformed Church, was not made compulsory. Some of these tables, lately associated with more domestic uses, were very beautiful and of fine workmanship, their bulbous or "melon" legs being their most striking characteristic. Many of them could be extended, and from this it is obvious that they must have been used in a very different manner from those of a more ancient day. Such is, indeed, the case, for when Com-



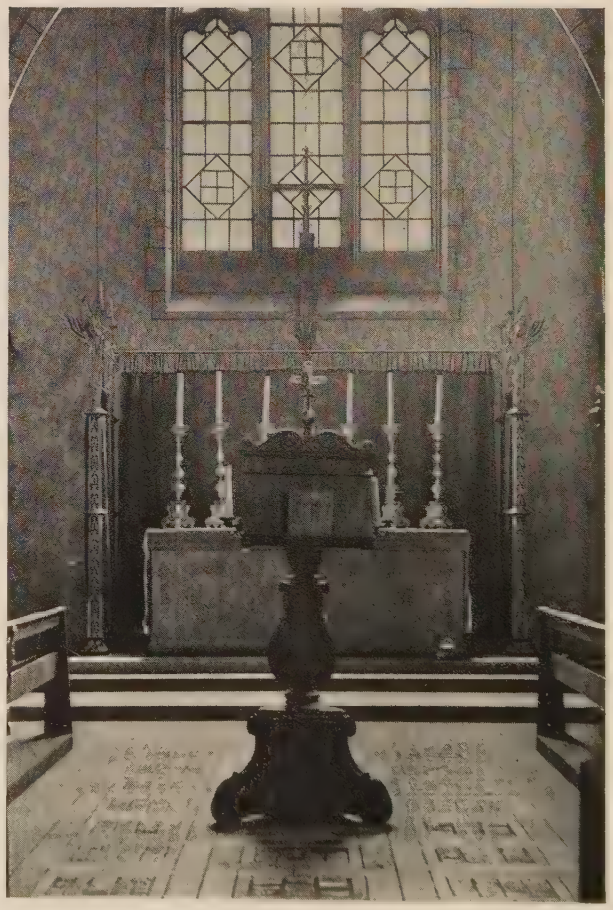
Altar in Chapel of Sts. Patrick and Bridget
Church of St. Vincent Ferrer, New York
Bertram Grosvenor Goodhue, Architect

munion was held in the days of the Commonwealth, the altar tables were carried out of the chancels and into the naves, where the participants seated themselves around the extended boards.

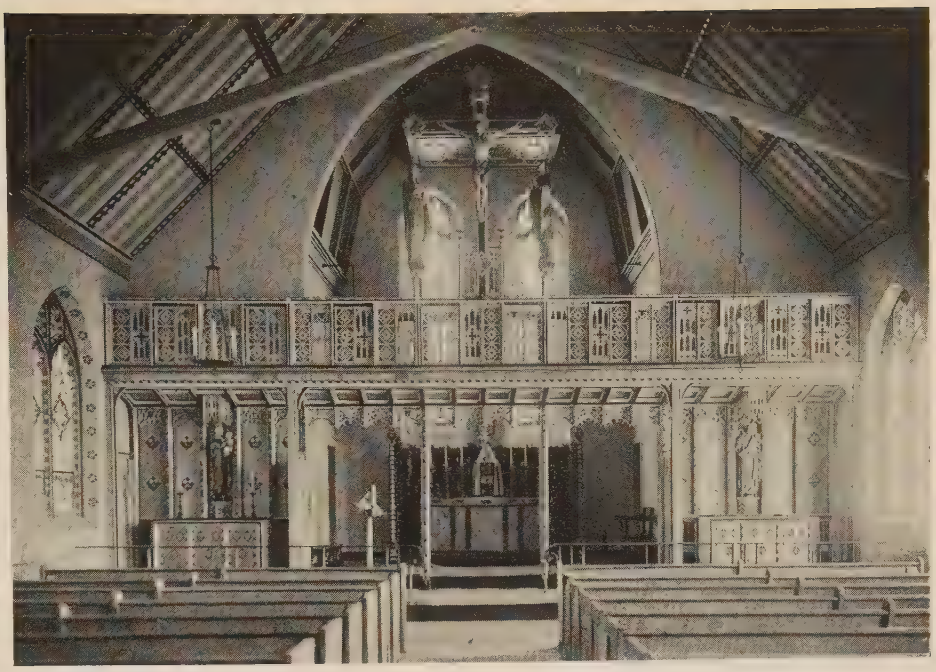
As this custom, happily, disappeared with the Cromwellian regime in England and, at least as far as the writer's knowledge extends, has never been revived in any of the many denominations of the Christian Church, it need not here be given much space. It will be well for us to consider, however, the types of altar now in use, calling attention to their points, good and bad. The most common form used in liturgical churches, but neither the most ancient nor the most dignified, is that type solid to the floor in front and at the sides, supporting a tabernacle and usually two gradines on which stand cross, candlesticks and vases for flowers. This type, carried to its logical conclusion by the purveyors of stock furnishings, has been described with more truth than reverence as a "glorified soda fountain"; or with its gradines increased to four or five, each loaded to capacity, it reminds one of a show window in a cheap retail store—thus defeating its artistic end, which should be to induce a spirit of reverence and devotion.

At the opposite extreme is the altar of the "Sarum" type without gradines or tabernacle, the cross and candlesticks, two or six in number, standing directly on the *mensa*. This was the form most common in pre-Reformation days. At altars where the Sacrament was reserved, the hanging pyx was used, this frequently taking the form of a dove of gold or silver, sometimes richly enameled or set with jewels. Immediately over this hung the pyx cloth and canopy of richly ornamented material. Where the Sacrament is to be reserved on the altar in a Roman Catholic or advanced Episcopal church a tabernacle is necessary, and at least one gradine for cross and candlesticks is likely to be desired. The tabernacle may be of wood or metal. It should contain a steel safe so secured as to be difficult to remove even though the outer door should be forced. This door is usually decorated in relief with symbols of the Passion, the most common being the Chalice and Host, the grapes and wheat, the pelican piercing her breast to nourish her young, and the sacrificial lamb.

From the earliest times it has been customary to provide some sort of screen or special background for the altar. This sometimes took the form of a painting upon the wall against which the altar stood, sometimes a hanging or dorsal with or without side curtains (riddels), and sometimes a more strictly architectural structure of wood or stone, often extremely rich in carving or painted decoration or both. Frequently riddels and reredos are seen in combination; occasionally dorsal and riddels in an architectural frame of carved and gilded wood. Color and gold may be used here without stint if this is to be, as it should be, the center of interest. Color and gold leaf, used extensively in the middle



Altar in Friars' Chapel
Church of St. Vincent Ferrer, New York



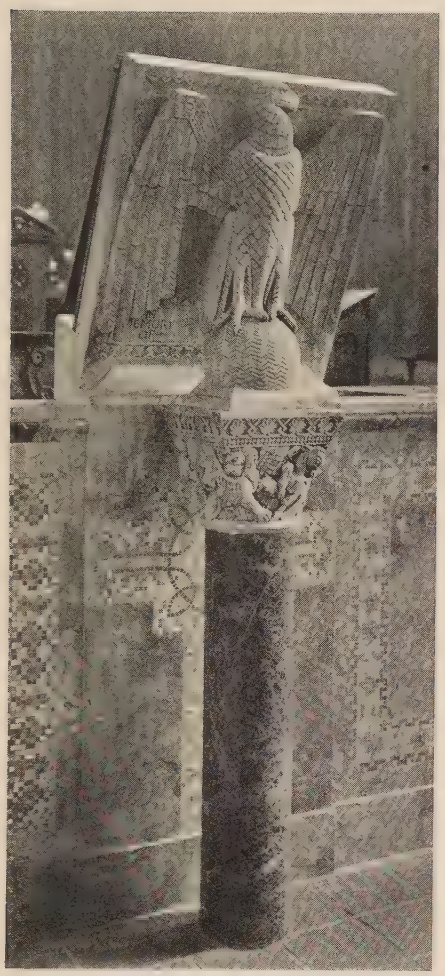
Fine Polychrome Decoration on Altars, Tester and Rood Screen
Wilfred E. Anthony, Architect

ages, and recently revived in England, is becoming more and more familiar to us in this country. Its first appearance here was timid and attended with much "antiquing" lest it appear garish. This need never be done if the secret of such color decoration be understood, that is to avoid large unbroken areas of any color, or even gold. When it seems difficult to adhere to this rule, as in the case of a background color, or in the garments of a figure, a pattern of gold or black will accomplish the result and give much enrichment. Another rule of great importance to be observed is the avoidance of placing color next to color without a separating stripe of black, white or gold. Color schemes should be simple, and usually limited to red, green, blue, white, black and gold. Tertiary colors may be used sparingly on drapery. Several good examples of reredoses, carved, sculptured, and painted in color and gold are shown here as illustrations—recent work from the offices of Bertram Grosvenor Goodhue, Cram & Ferguson, Wilfred E. Anthony, and Perry, Shaw & Hepburn. The beautiful reredos in the chantry at St. Thomas', New York, is easily the best single piece in that place of splendor and symbolism.

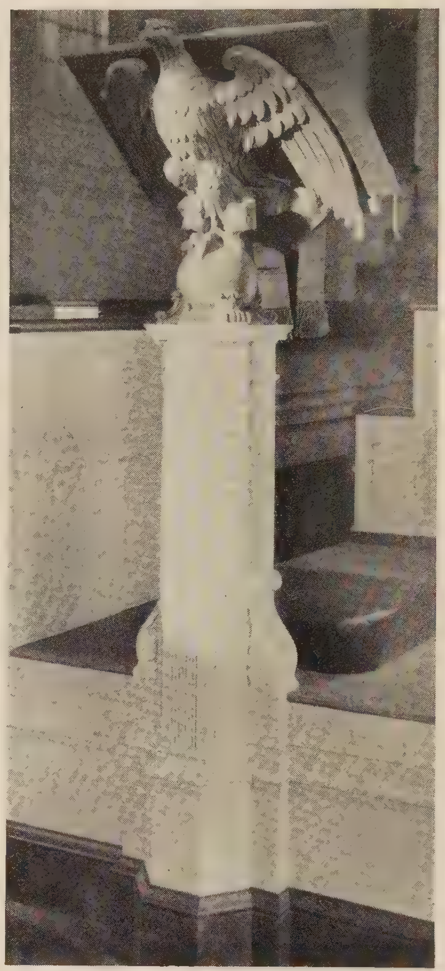
Opinions may differ as to the piece next in order of importance. Some may consider the font, from the sacramental nature of its use, as the equal of the altar. Some, and these are very numerous indeed, would place the pulpit in an equally important place. Others of the liturgical persuasion would so regard the credence; still others, the lectern. Let us consider the lectern next.

It was customary in the middle ages to provide in the chancel a lectern, from which the Gospel was read. This was usually a movable desk, but sometimes it was built into the north or Gospel side wall of the chancel. Another lectern stood in the space between the choir stalls, and held the great books from which the choir sang. These lecterns were generally of two or four sides, many of them extremely rich in carving, and with shafts and bases elaborately buttressed and moulded. The brass eagle or pelican lectern did not appear until the sixteenth century. At the time of the Reformation the chancel lecterns were brought forward to the chancel entrances, where places often had to be made to receive them in existing choir screens. This is their customary place today in parish churches. In cathedrals or in conventual churches they are still to be found in the chancel as well as in the choir screens. As to the placing of the lectern, north or south of the chancel entrance, there seems to be no well established rule among liturgical bodies. In the parish church where the bishop's chair stands on the north side of the sanctuary, it seems proper to place the pulpit on the south side; the lectern then takes its place on the opposite side. The type of lectern common to the Gothic church, while frequently beautiful, is usually insignificant—if one considers its important use in the church service. More appropriate in their size and arrangement are the *ambos* of the early Italian churches. With these in mind, let us picture the ideal Gothic lectern.

The sacred character of its function will be proclaimed by its size, elevation and enrichment, and the fact that it will be approached from within the chancel parapet. Its floor level will be higher than the level of the floor in the pulpit opposite, for its message is from a higher source. It will be in two parts and of two materials, suggesting the two grand divisions of Scripture, the Old and the New Testaments. The base will be of stone, the more ancient material supporting the parapet and superstructure, which will be of wood, a material higher in the order of creation. The theme of its decoration will be the unity of Scripture. Sculptured panels in bas-relief in the stone base will match—subject to subject—with panels in the wood parapet above in some such manner as this: The giving of the Ten Commandments paralleled by the Sermon on the Mount and the giving of the Beatitudes. Moses lifting up the serpent in the wilderness, in juxtaposition to the Crucifixion. Melchizedek, king and priest, bearing



Eagle, in Stone and Mosaic
Lectern, St. Bartholomew's, New York
Bertram Grosvenor Goodhue, Architect



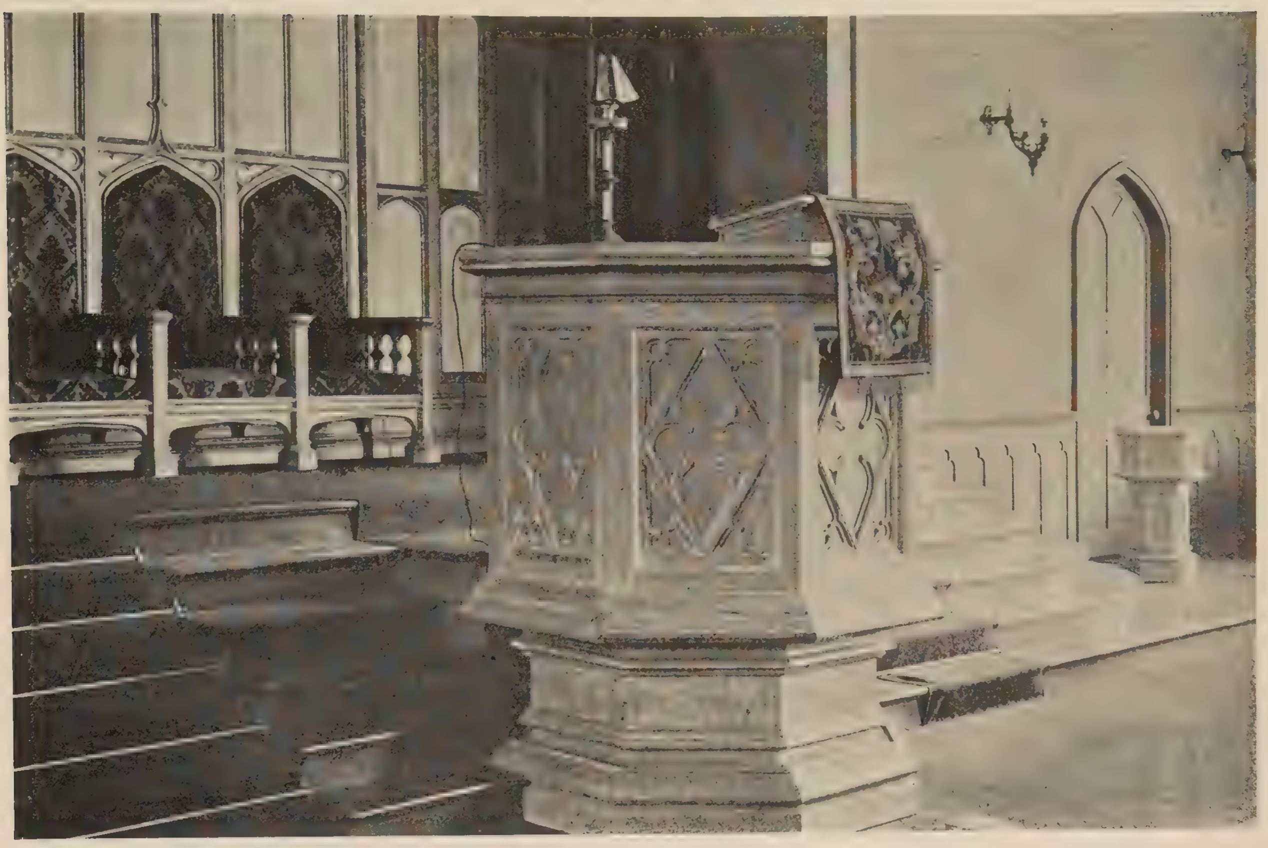
Lectern of Eagle Type
St. Paul's, Newburyport, Mass.
Perry, Shaw & Hepburn, Architects

bread and wine, with Christ at the Last Supper, and other examples of a similar nature. At the four free corners of the lectern will be four niches in which will be found figures of the four major prophets, bearing on their shoulders the four evangelists, as pictured in the great south transept window at Chartres. The central panel of sculpture will show Christ opening the Hebrew Scriptures to His disciples, and explaining therein the things concerning Himself. The bookrest will be richly carved and overlaid with gold, and over all a canopied tester will be built in spirelike form against the chancel pier.

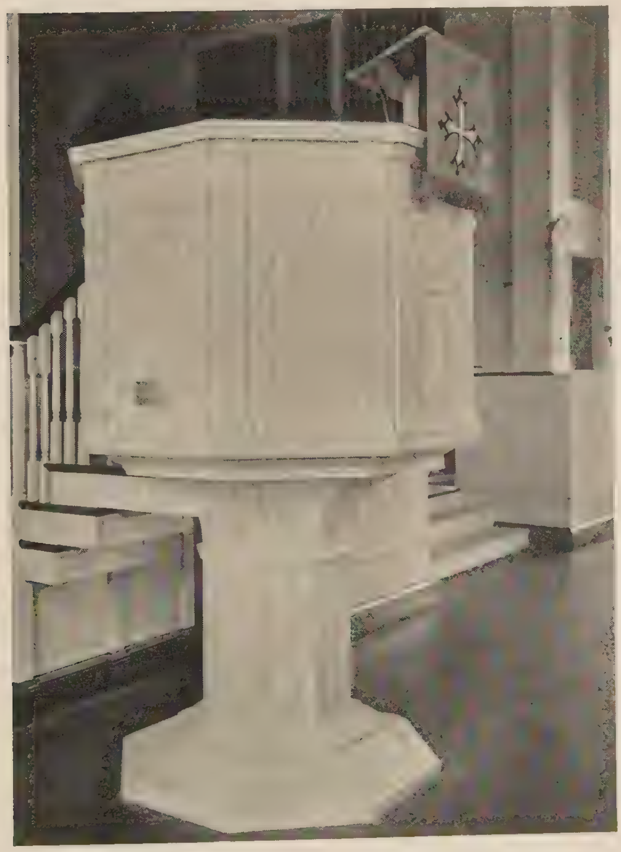
Few pulpits antedating the fifteenth century are to be found today. Their use before that time seems not to have been general. Their position was usually against the first free-standing pier west of the chancel arch, sometimes on the north, sometimes on the south side; but many were later moved to their present positions against the choir screens. Frequently they were most elaborately decorated, and very often quite small and slender, in some cases of slightly more than 2 feet inside diameter. This added greatly to their grace and scale, if not to the comfort of the preachers. The hexagon seems to be the most common form, with the octagon almost equally popular, although nine- and twelve-sided pulpits are not uncommon. Doors to pulpits may or may not be used. Many were at one time provided with doors, now usually missing, and in most instances the steps are modern. Bases were often of stone, especially in the earlier examples, while in the later types the superstructure rests on a slender stem with moulded cap and base branching out with graceful coving to meet the sill. Wherever it is possible, the pulpit should be placed against a masonry wall or broad pier, for acoustical reasons. In a very long church it may be necessary to locate it against one of the nave piers, although objections will inevitably be raised to this by those who occupy the front pews. There are instances where front pews are so arranged that their occupants may turn about to face the pulpit at the time of a sermon. In mediæval days, when the congregation stood through the whole service, the pulpit could be located almost anywhere without inconvenience.

In a sacramental sense the font is next in importance to the altar, although frequently in liturgical as well as in non-liturgical churches it is forced to occupy a very unimportant position in the church. Its historical and symbolical position is near the main entrance, and whenever possible it should be so placed. The desirability of having it located so that a certain portion of the seating space is available for private baptisms, or when the sacrament is performed during the regular service so that all may witness the ceremony, has led to the custom of having the font placed well up toward the chancel.

Fonts are most frequently of stone, although old ones of wood, lead and even brick, dating from pre-Reformation times, are still in existence in England. The favorite shape has always been the octagon—eight signifying re-creation or re-birth, the first creation occupying seven days, the eighth marking the beginning of new life. Circular fonts are very common, however, and one occasionally meets with



Pulpit and Chancel Chairs, Unitarian Church, Fall River, Mass.
Parker Morse Hooper, Architect

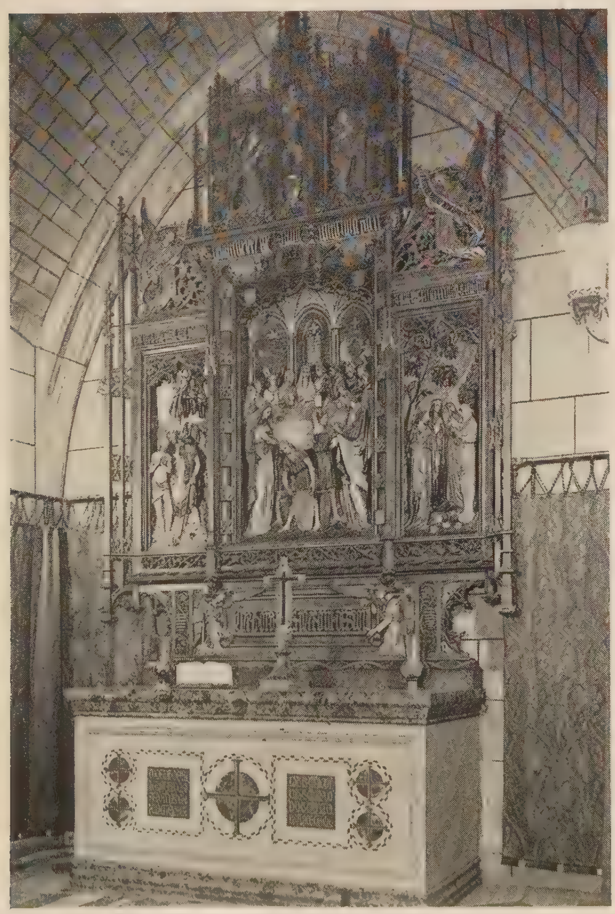


Pulpit, St. Paul's, Newburyport, Mass.
Perry, Shaw & Hepburn, Architects

square, hexagonal, heptagonal, or even pentagonal fonts. The earliest fonts are of the "tub" shape, without base. The chalice form, surrounded by small columns, was also characteristic of early mediæval days. While it is a modern custom to elevate the font three steps above the floor, this is not by any means the traditional practice. In fact there seems to have been no fixed rule governing this matter, and fonts raised one step, or two steps are quite as numerous as those elevated three steps in height. There are also many instances of fonts set directly on the nave floor.

The font cover affords a wonderfully fine opportunity for interesting craftsmanship, and for the display of mechanical ingenuity in designing the raising and lowering devices. The original object of the font cover was to prevent the improper use or profanation of the water which was always kept in the font. The cover must be provided with some means of locking, and must be kept locked except when in use. The more pretentious covers usually took the form of elaborate spires, raised by means of counterbalanced weights often, but not always, within the spire itself, the whole being suspended from a bracket or from the roof timbers. Stationary covers provided with doors are also common, and provide an opportunity for figure decoration on the inside and hardware on the outside. An unusual and interesting form of cover is that of the sixteenth century font at Trunch, in Norfolk, England —an elaborate affair supported from the floor on six posts, and forming a canopy over the font, with sufficient room on all sides for the officiating priest. Carried out in the most elaborate form, with tier upon tier of canopied niches, gradually diminishing into a delicate spirelike pinnacle, crowned with its dove or pelican, the whole structure gilded and colored, this font cover presents a gorgeous spectacle, rivaling in splendor the reredos itself.

Volumes might be, and indeed have been, written about the choir and parclose screens of the late middle ages in England; but within the limits of a short paper it is not possible to give them much more than passing mention. The popularity of the screen is easily understood, for it offers exceptional opportunities to the designer and wood carver and adds much to the effect of dignity and mystery in the church. While their purpose seems to have been largely symbolic and æsthetic, screens were in many instances combined with the rood loft and used by the priest in reading the Epistle and Gospel, or as musicians' galleries. In this form, with the vaulted overhangs rich in carving and tracery and often decorated in color, they are perhaps the most beautiful creations of the wood workers' art which have come down to us from mediæval England. Although their use today will necessarily be limited to churches of a "high" tendency, they offer suggestions in simplified form for narthex and gallery screens in churches of any denominations, or even in parish halls. Their running bands of exquisitely carved grape and other vines offer a never-failing supply of suggestions for the artist, while the few surviving painted panels give us some idea of the skill of the mediæval craftsman in decorative figure painting.

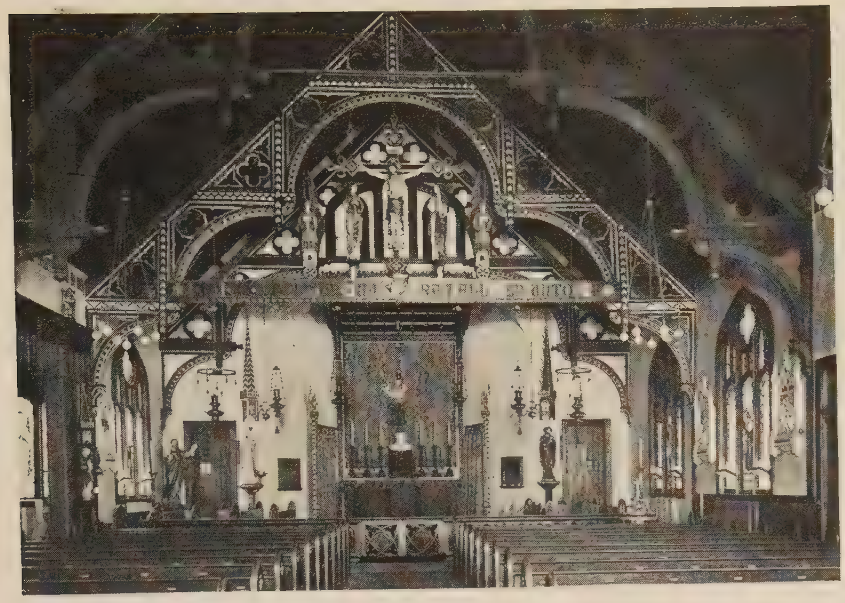


Chantry Altar, St. Thomas' Church, New York
Cram, Goodhue & Ferguson, Architects

Lady Altar, All Saints', Dorchester, Mass.
Cram, Goodhue & Ferguson, Architects

Of all the furnishings and fittings which go into the modern church, that which is of the greatest interest to the majority of the congregation is the organ. In this instance, and in but one other—the lighting fixtures—we have no mediæval precedent to draw upon; for while in every other respect the churches of the middle ages are well worthy of emulation, their organs and other musical instruments were of the most primitive sort. Development in music and musical instruments since the days of the great church builders has gone far toward making amends for the decline in the arts of stained glass and figure sculpture. There are, of course, a few organs and organ cases dating back to the Renaissance, but the problem of the organ, its housing and decoration is essentially modern.

The location of the organ chamber (so says the organ builder) is one of the most important con-

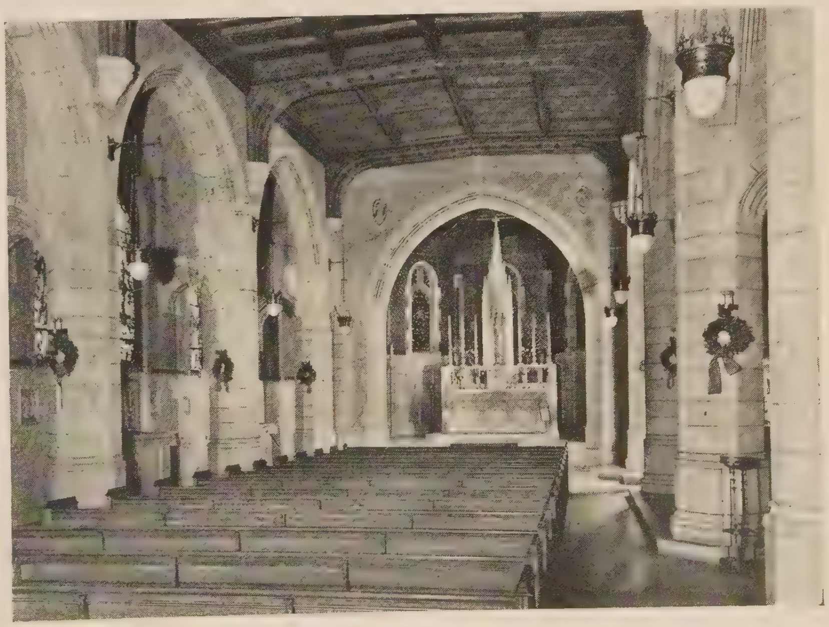


View of Nave and Sanctuary
Church of the Holy Innocents, Pleasantville, N. Y.
Gothic altar with tester, dorsal and riddels

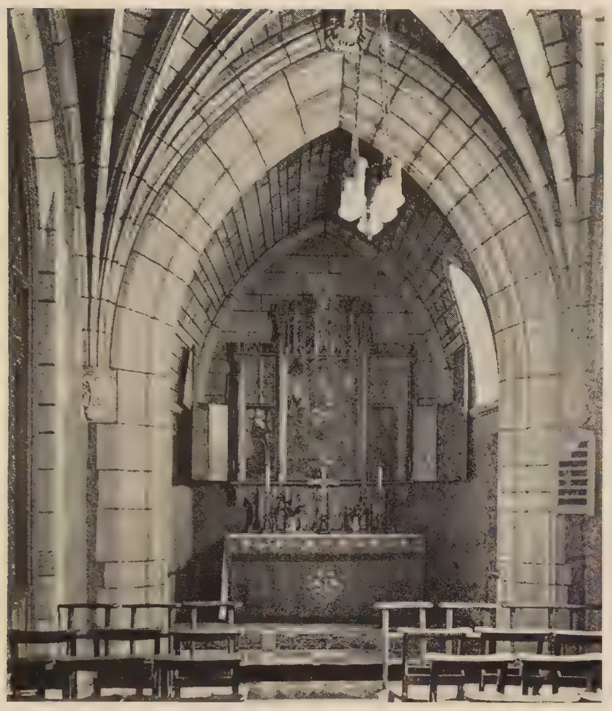
siderations in the planning of the church. This would indeed be true, were the church a concert hall; but, while the organ is an important detail in the church furnishings, and every effort should be made to provide adequate space for its intricate and delicate mechanism, the real purpose of the church must always be kept clearly in mind, and its various parts arranged in proper order. Although he never expects us to follow his advice, we should always consult the organ builder at an early stage in the preparation of drawings for the church. He will tell us that the chamber should have a clear inside height, over as large an area as possible, of 22 feet, and that it should open out into the church with an opening as large as space will permit. It should not be located near a chimney, neither should it be lighted by windows, unless double glass be provided. In order to protect the organ from possible damage by leaky roofs, a protective roof of timber covered with some good roofing material should be hung from the rafters of the chamber and connected at its lower side with a drain. There must be a motor room provided somewhere nearby, with the possibility of obtaining air direct from the church. As the motor is frequently noisy, it must be soundproofed from the church proper. If it is in the cellar, there must be a pipe provided for the delivery of air to the organ above. This will be a round pipe 10 or 12 inches in diameter. The console with its bench will occupy a floor space 6 feet square, and unless one is watchful it will be found to be very bulky. By sinking it a step or two below the neighboring choir benches it will not be too much in evidence. Its proper location, with respect to the organ, is on the opposite side of the chancel.

Where the organ and singers are located in a gallery at the west end of the church, the chance of the organ tones being stifled is removed, and both organ and choir act as supports to the congregational singing. The earliest of the large organs, those of early post-Reformation days, were usually built on the rood screens, displacing the then unpopular rood. In this position, with the small choir organ facing the choir, and the great organ fronting toward the congregation, there was nothing to interfere with the perfect operation of the instrument. Æsthetically, however, it does not seem correct to block the main axis with an object of secondary importance.

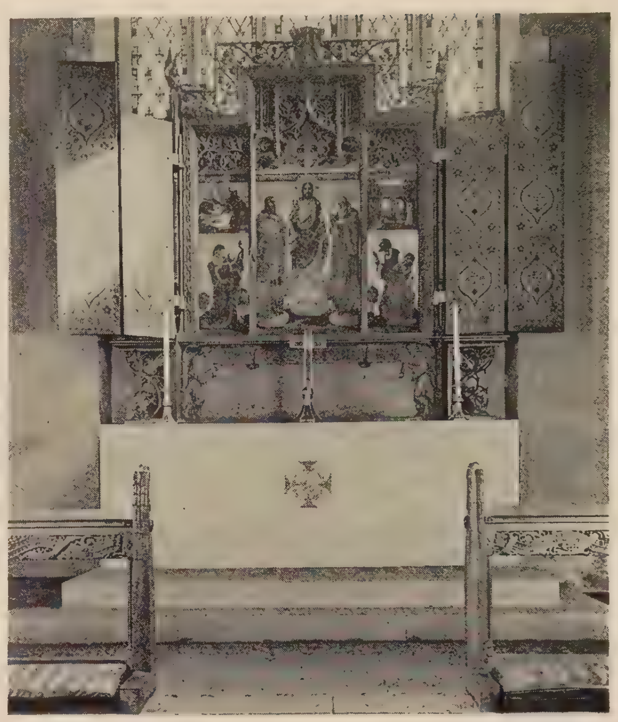
Of the remaining furniture of the chancel and sanctuary, altar rail, choir benches, bishop's chair and kneeler, little can be said without exceeding the limited space assigned to this paper. A word of advice to the novice in Gothic design may not be out of place at this point, which is that it is dangerous to try for originality, since disaster will surely follow. In fact it is not too much to say that this applies to the expert as well. A too apparent attempt at originality, even though artistically successful, makes too much of a self-conscious display of one's "personality" to be good Gothic, besides being quite out of



Students' Chapel, Boston College
Maginnis & Walsh, Architects



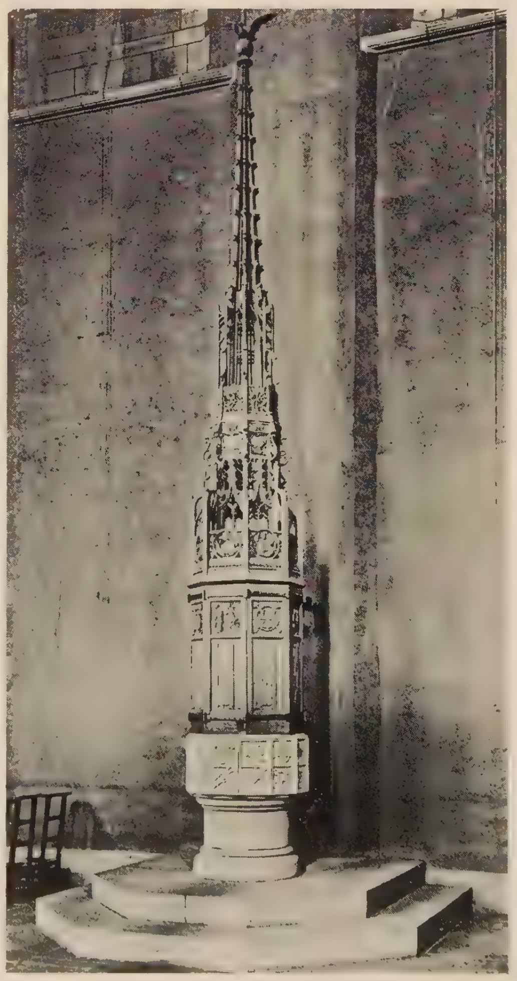
Triptych, Chapel of the Intercession, New York
Bertram Grosvenor Goodhue, Architect



Altar, St. Mark's Church, Mt. Kisco, N. Y.
Bertram Grosvenor Goodhue, Architect

place in a church. After examining, perhaps with much momentary enjoyment, the stunts and clever tricks of design in some of the best modern examples of furniture, one turns with relief and satisfaction to the fine old work of the middle ages. The one soon becomes tiresome, like a twice-told joke—the other improves with acquaintance, and never fails to arouse our admiration. As it is practically impossible ever to copy anything, line for line, detail for detail, without sooner or later coming to the point where conditions demand something different, it follows that everything we do must in some sense be original. Beyond this point it is dangerous for the novice to venture, and even the experienced must proceed with caution, or his work will be largely a display of "ego."

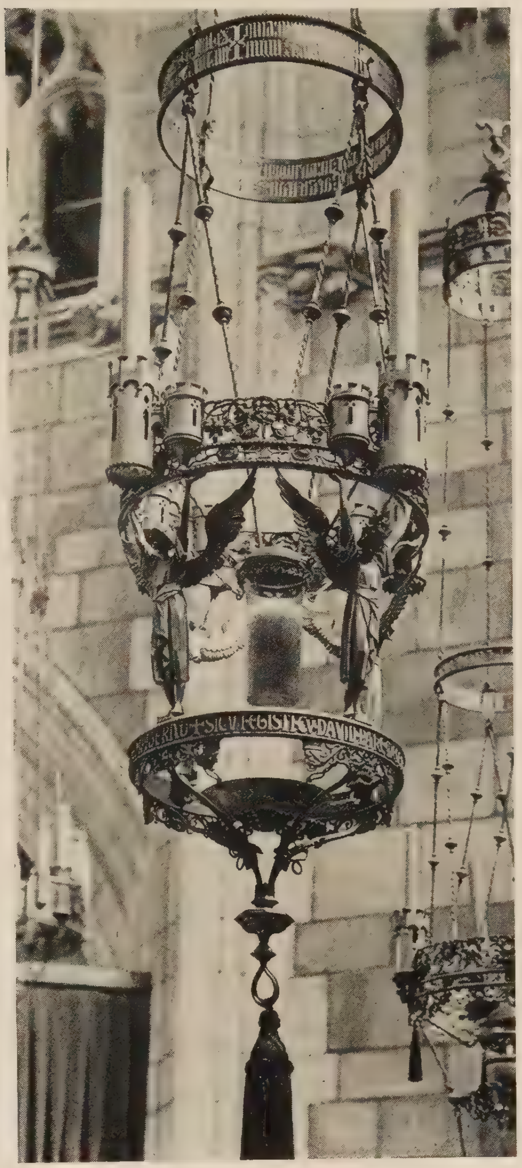
If it comes to a point of deciding between pews and individual chairs for the seating of the congregation, there are arguments in favor of each. The average congregation will prefer pews because it has always been used to pews. The idea of the "family pew" still clings, while the family row of chairs lacks the same sentimental appeal. You will be told that pews are more comfortable, which may be true, and that if one has a pew, one always knows where to sit, while chairs always get moved this way and that. The latter is a point in favor of chairs, for they can be moved forward and backward, arranging the spacing to suit the size of the congregation. Chairs are perhaps the more pleasing architecturally, although well designed pews, rather low, and spaced a generous 3 feet or more on center can be very handsome. Square pew ends are to be preferred, but if placed too close together, they impose a hardship on the portly. In designing the supports to the seat, leave plenty of room for kneeling. Make the seats comfortable; there is no rea-



Font with Gothic Canopy
Chapel of the Intercession, New York

son why one should not be comfortable even in church.

The problem of artificial lighting in its two aspects—practical and artistic—is always with us. There are several ways to do it, and one may take one's choice. Bracket lights may be attached to each pier, with additional brackets on the aisle walls. If the seats in the middle aisle receive any of the light, they are lucky. Or, fixtures may be hung from truss or vault, shedding the light at places best suited to a general distribution. This is efficient, although it does seem silly to wire to the roof and then down again. A modification of this scheme is to drop the lights from projecting brackets. A more reasonable but less usual arrangement is to light from standards set among the pews. This latter scheme can be successfully adopted in the choir stalls, as at Gloucester Cathedral. The effect of the lighting when kept low is much more beautiful, the roof being dim and shadowy. It is better, therefore, both practically and artistically, to design the fixtures so as to shed all of their light downward, and leave the roof in darkness. The individual lighting of pulpit and lectern should not be overlooked when designing those pieces. Electrified candlesticks with metal or mica shades may stand beside the manuscript desk on the pulpit rail; bracket lights from the sides of the lectern with hooded reflectors to light the page will do well at that place; or, if the lectern stands on the floor, a wrought iron standard by its side will serve the same purpose. The horizontal tubular lamp can also be used on the front of manuscript rack or book rest, if architectural camouflage be provided to cover its commercial nakedness.



One of Seven Gothic Altar Lamps
Church of St. Vincent Ferrer, New York
Bertram Grosvenor Goodhue, Architect

To cover the subject of church furnishings adequately, some mention should be made of the fittings of the sacristies and robing rooms as well as of the practice room for the choir. The choir vesting and practice room may be combined if the choir is composed of men and boys only. For a mixed choir, two vesting rooms with toilets will be necessary, although if space and funds are limited, the larger, possibly the men's, may be used for practice. For this purpose, it should be as large and lofty as possible, approximating the chancel in size, with the seats arranged in the same manner. Where conditions are ideal, the choirmaster has a separate room in which all music is kept. Individual lockers or wardrobes should be provided for cassocks and cottas. Altar vestments are hung, without folding, in cases made especially for that purpose, and may be housed in the working sacristy or in some room convenient to the chancel. Cases for clergy vestments are of course provided in the clergy sacristies, and their number and design will vary with the type of service. A safe, large or small as the case may require, will be needed for altar vessels and plate, or anything of value.

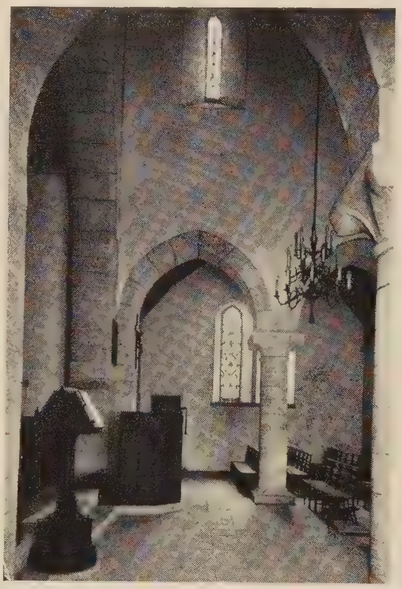
In the designing of church furnishings, to the same extent as in the designing of the church fabric itself, the real purpose of the work should be kept in mind. This purpose is, not to advertise the architect, through the publication or exhibition of his work or in any other way; neither is it to provide him with an entertaining problem, wherein he can give expression to his "personality" or his pet ideas, theories or hobbies. His work should, by the subtle power of its beauty, combine with the beauty of the music and the ritual to arouse the spirit of worship. The results of his study are, therefore, more than æsthetic, and his problem is more than architectural.

Church bells, and the methods of casting, tuning and mounting, ancient and modern, present a subject which the church architect or any other might pursue to advantage. Every church tower of any size should be built to receive chimes with chamber for ringers below. Chimes rung from a keyboard must obviously be operated by hammers, and the use of this all-too-easy method has resulted in the abuse of the art of bell ringing. Unpleasant overtones produce false harmony, and the effect, except from a great distance, is likely to be altogether disappointing.

EDITORIAL COMMENT

RELIGIOUS INFLUENCE UPON ARCHITECTURE

As architecture is the highest form of art, so art is the sublime material achievement of mankind. It is the natural medium through which humanity interprets the joy of life and demonstrates the extent of its civilization. Springing from the innermost recesses of the human spirit, it is one of the visible and tangible evidences of spiritual power expressed through the medium of the human mind. In "Church Building" Ralph Adams Cram says that art is the result of beautiful ideas, of beautiful modes of life, of beautiful environment, and that in all its forms it owes its inspiration to the Church, without which it could not have existed. The highest expression of the art of a people has always been religious architecture, because the building of a church is in itself an act of worship, a confession of faith. In the progress of building, the religious edifice has led all others; it has furnished precedents and traditions as well as opportunity and inspiration for all the arts; it has made architects famous and workmen skillful and has preserved the continuity of architectural development throughout the centuries. As during the dark days of the middle ages, the Church was the repository of the culture and literature of ancient civilization, so also through the artistic destruction and deterioration of the Reformation it was the guardian of all the art of the past, preserving it for posterity.


View from North Transept
All Saints', Peterboro, N. H.
Cram & Ferguson, Architects

Consciously or unconsciously, to many people a church leads the mind back through the past centuries of Christian worship from the beginning of the Church to the present, and embodies the idea of consecutive centuries of devotion, to which we in the present day are adding the latest contribution. The earliest temples erected by the Egyptians for the worship of their deities, 40 centuries before the Christian era, were followed by the highest development of the pagan temples of Greece and Rome, and these temples in turn by the arcaded basilicas of the early Christians, the gorgeous Byzantine and Romanesque churches of the early Catholics, which developed into the dazzling beauty of the full Gothic style in the great cathedrals of France and England. Then the Church largely reverted to classic influence in the highly ornate religious edifices of the Italian Renaissance, influencing during the seventeenth and eighteenth centuries the architecture of France, as shown in the styles of the several Louis, and the Empire, and of England, as exemplified in the periods of the several Georges, and carried over the seas to eventually fade away in the American Colonial and Empire or neo-Grec architecture. Thus we can trace the unbroken influence of religion upon architectural development and history.

Although the inspiration of creative art was dulled and diverted by materialism during the greater part of the nineteenth century, the Gothic revival in England, which inaugurated a fresh interest in church architecture, followed as it was in this country by a return to Classic and Renaissance precedent, has gradually given renewed vigor to the architecture of ecclesiastical edifices, evidenced by the splendid churches built both in England and America during the past 20 years in which massiveness of construction, grandeur of scale, dignity of proportion and beauty of well placed decoration all demonstrate the never-ending influence of religion upon architecture.

At the present time the trend of church architecture in this country as well as in England is toward a more conscious and visible expression of the eternal verities for which the Church stands, exemplified by truth of design, integrity of construction, durability of material, grace of proportion, dignity of scale, beauty of detail, symbolism of ornament, warmth of stained glass and richness of furnishings. This endeavor to perpetuate in the religious structure something of the significance of its high purpose is not alone restricted to the architecture of the liturgical Churches. It is indicated quite as distinctly in the recent designs of churches of the various Protestant denominations and the members of its faith which have found a haven in this land of religious freedom, all this evidence of the growing desire and effort to more truthfully and fittingly portray the deep significance of the varied expressions of religious faith in the architecture of the structure which is to be its temple. Never has there been a greater opportunity than there is today for the architect to make a real and lasting impression on civilization and life through his untiring zeal and unceasing effort in the expression of his highest creative instinct in this vast and inspiring field of artistic achievement—the building of the House of God.

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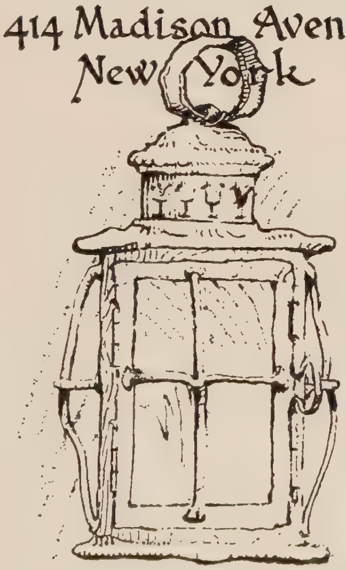

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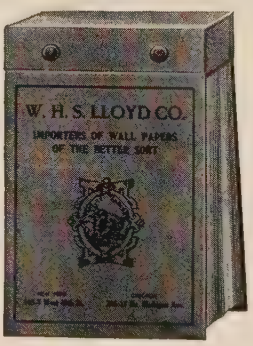

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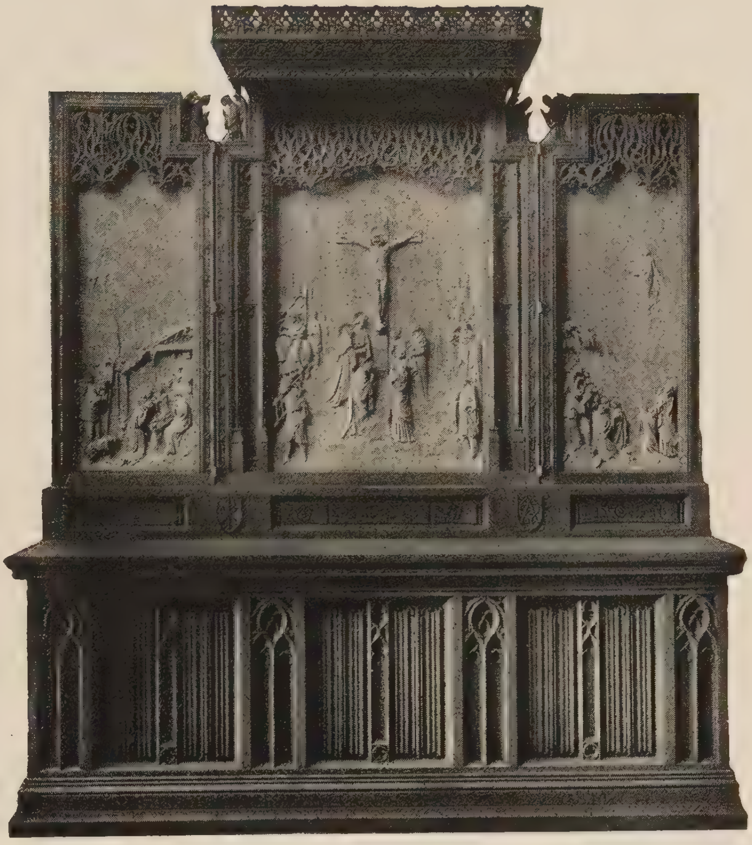

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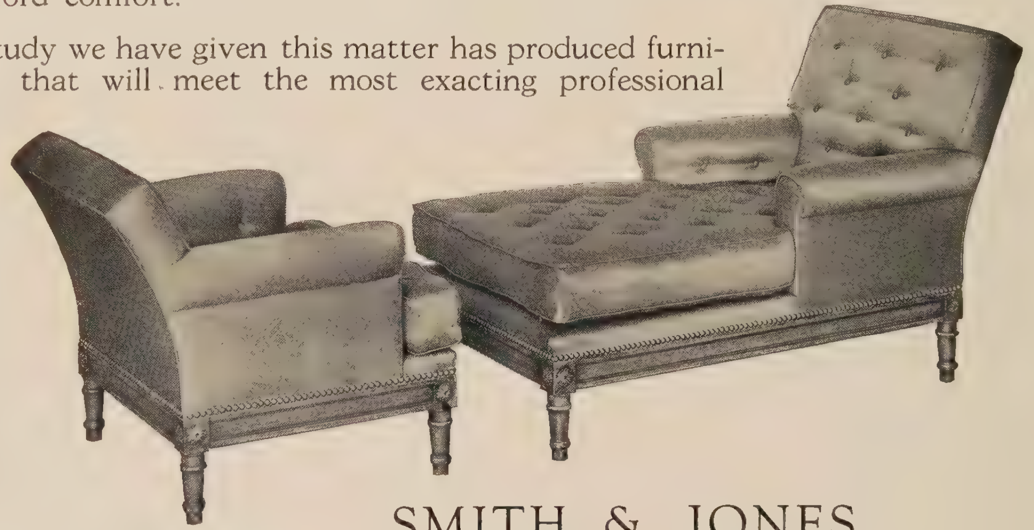

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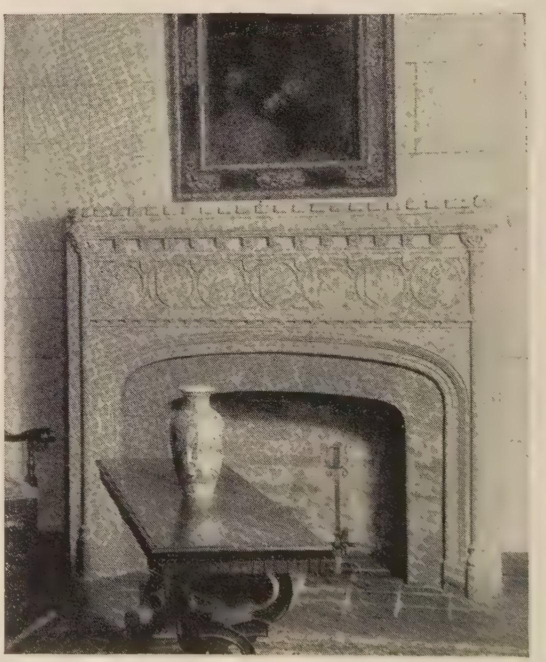

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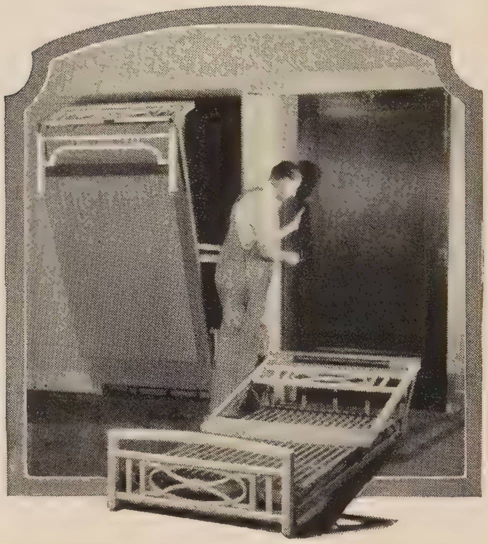

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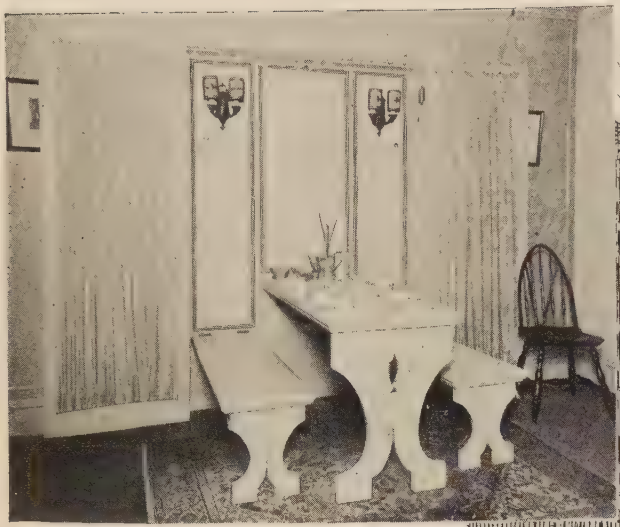

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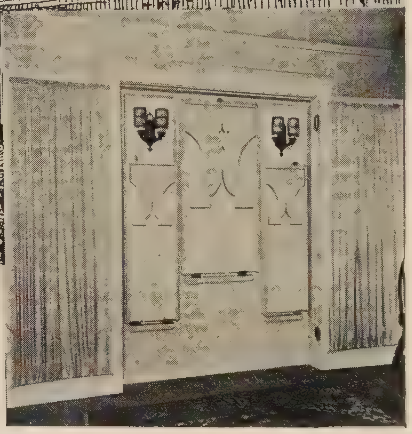

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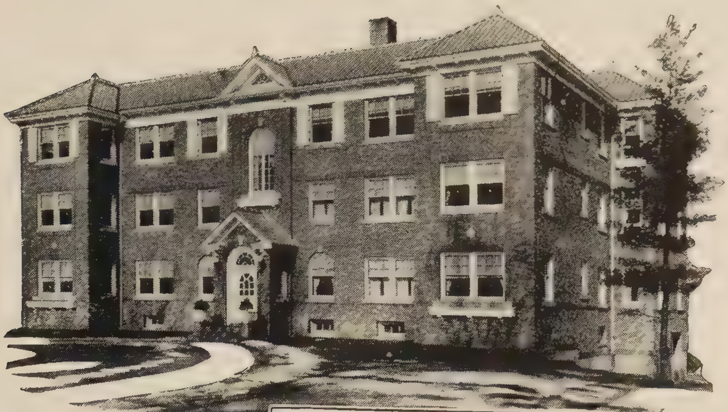

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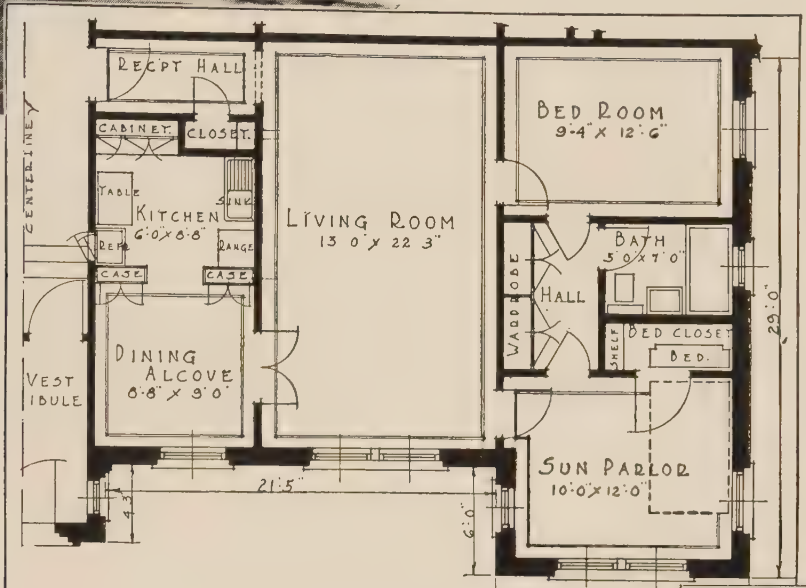

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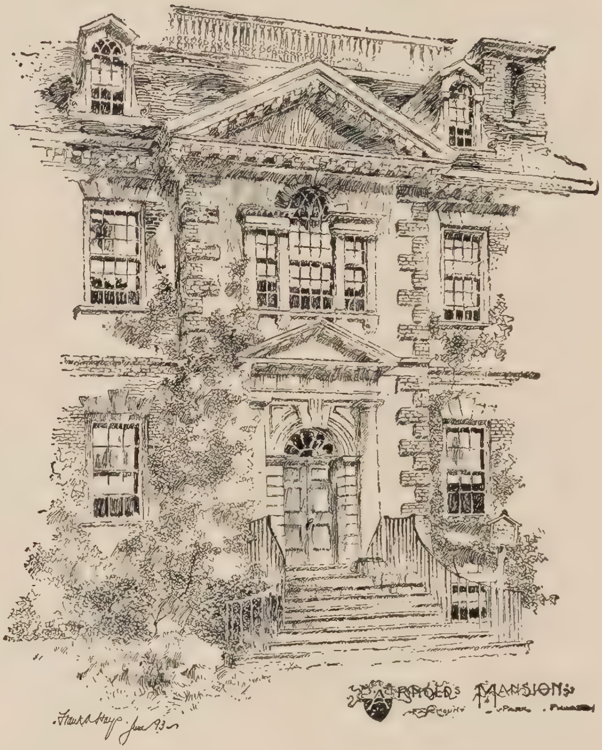
Baron de Steuben, Inspector-General of the Army under Washington, also resided at Mt. Pleasant. It became the property of Philadelphia in 1868.

The stateliness of this old mansion, architects agree, is due largely to its impressive height emphasized by a predominance of vertical lines. The hip roof, for example, is heightened in effect by a high balustrade. The four dormers, which light the attic, and the tall chimneys, obscured within the walls until they emerge above the roof, also accent the vertical lines.

In its construction, architects consider Mt. Pleasant particularly interesting. The 18-inch walls are reared upon a gray ashlar base 6 feet high. Two courses of molded brick appear at the level of the first floor. The walls above this brick base are stuccoed a reddish buff color, and continue by means of tooling the rectangular pattern of the masonry below.

Quoins, five bricks high, carry the brickwork decoration past a band-course at the second floor level and upward to the main cornice. Lintels of brownish stone incised in imitation of flat arches span the window openings. The broad window frames and all other woodwork are painted white.



Mt. Pleasant, or Arnold's mansion, was built in 1761. It overlooks the Schuylkill River in what is now Fairmount Park, Philadelphia.

This portfolio of drawings sent to you

The most important interior and exterior details of Mt. Pleasant mansion have been accurately measured and drawn by Chas. L. Hillman. These measured drawings form only a part of a working size, loose-leaf Portfolio of Early American Architecture. A copy will be sent without charge to any architect requesting it. Just write us for Portfolio No. 6.

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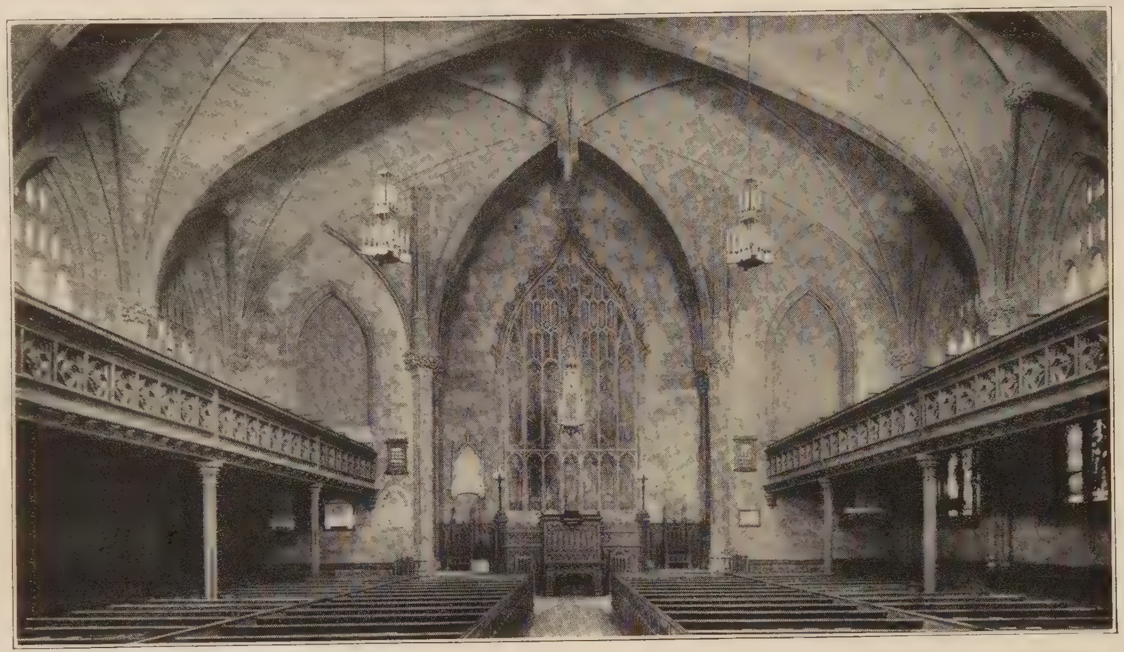
A-28

O'Brien's



Grosvenor Atterbury, *Architect* Interior of First Presbyterian Church, New York City Horace Moran, *Decorator*

THE CHURCH INTERIOR

THE interior of the First Presbyterian Church of New York City (illustrated above) is a splendid example of the decorative possibilities of LIQUID VELVET. Here, Grosvenor Atterbury, the architect, wanted the high walls and groined art spaces to be so decorated as to perfectly imitate aged caen stone. This was so cleverly executed by Horace Moran, the decorator, that only close inspection reveals the fact that the effect was produced with LIQUID VELVET and not by the masons' work. For "Walls of Lasting Beauty—Ceilings That Endure," specify LIQUID VELVET, the Washable Flat Wall Enamel. Its tones and texture are smooth, soft and mellow like those of velvet itself. This is the perfect flat wall finish, recognized as such by many leading architects and interior decorators and used by them for some of the finest jobs of interior decorating in the country. Color charts and specifications will be gladly furnished on request.

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Extract from "MONSIEUR De CHAUVELIN'S WILL"
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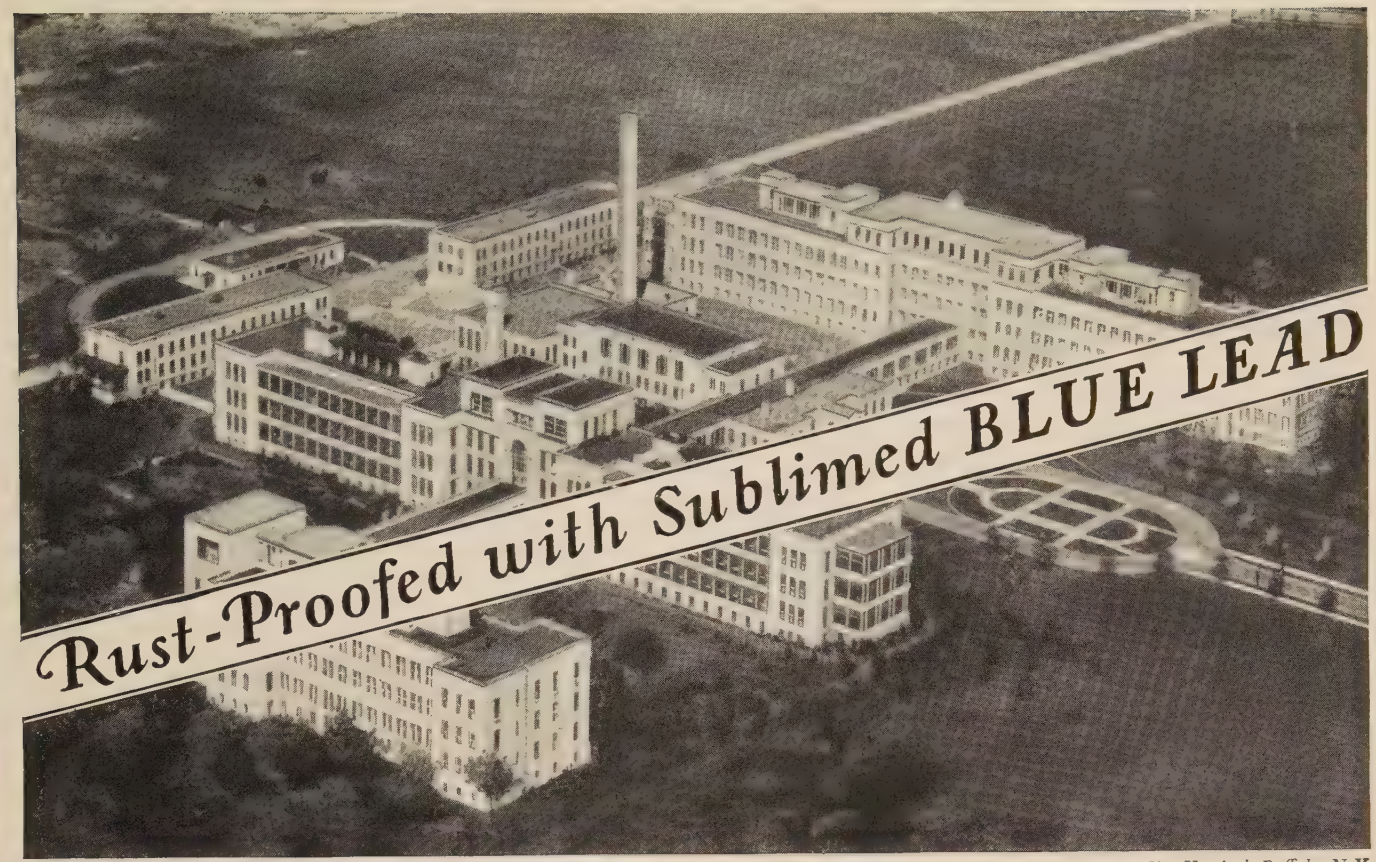

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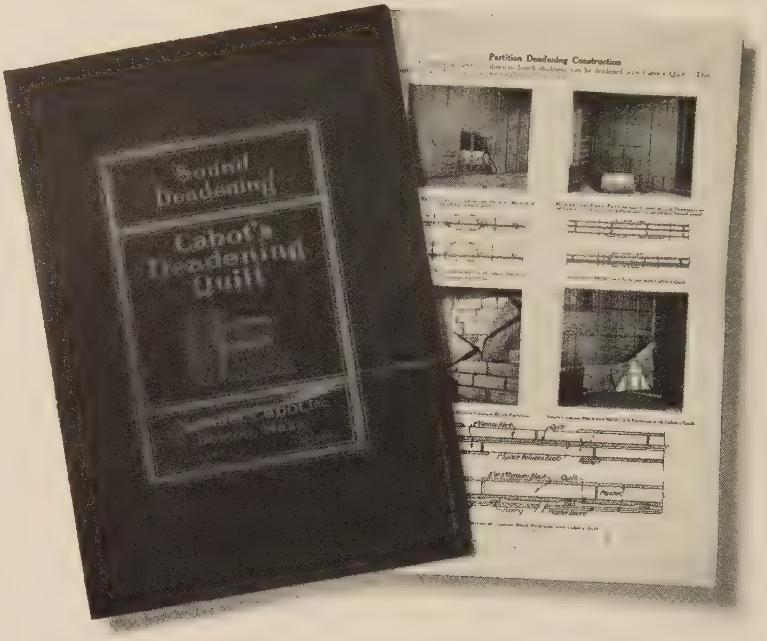

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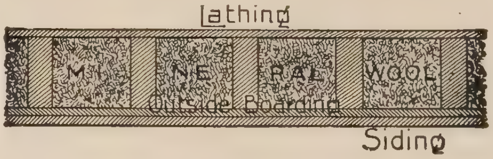

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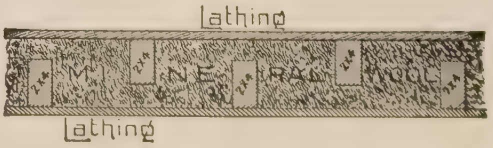

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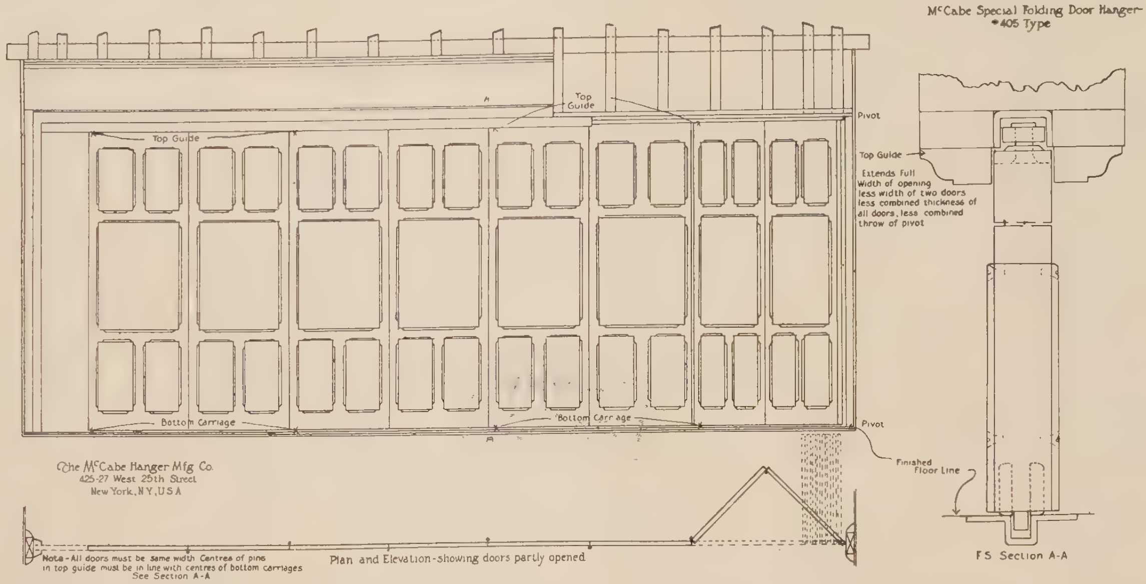
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F.S. Section A-A

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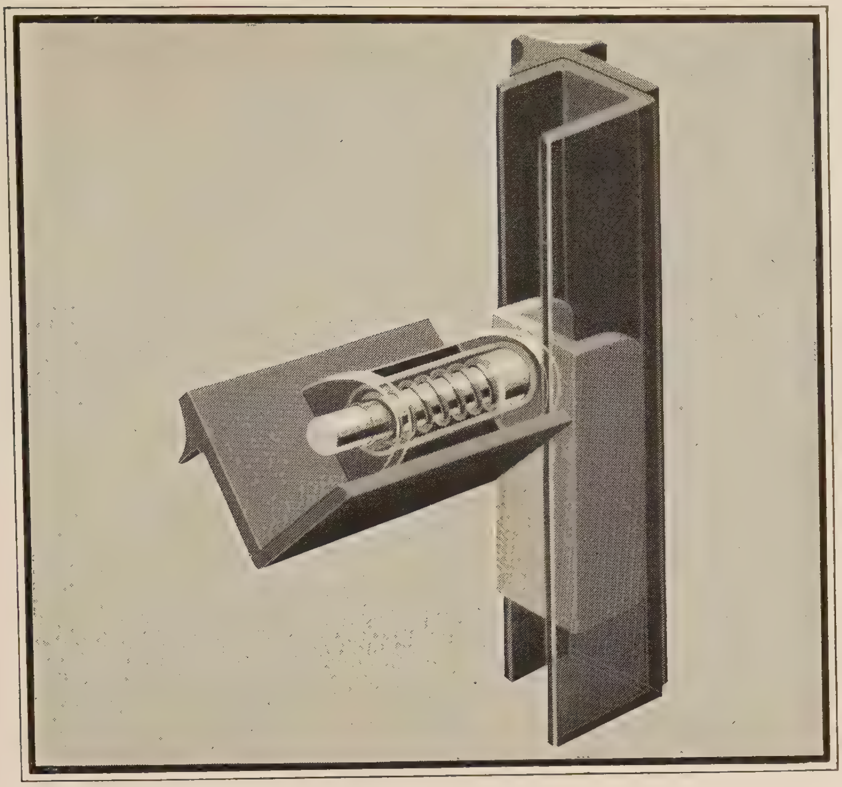

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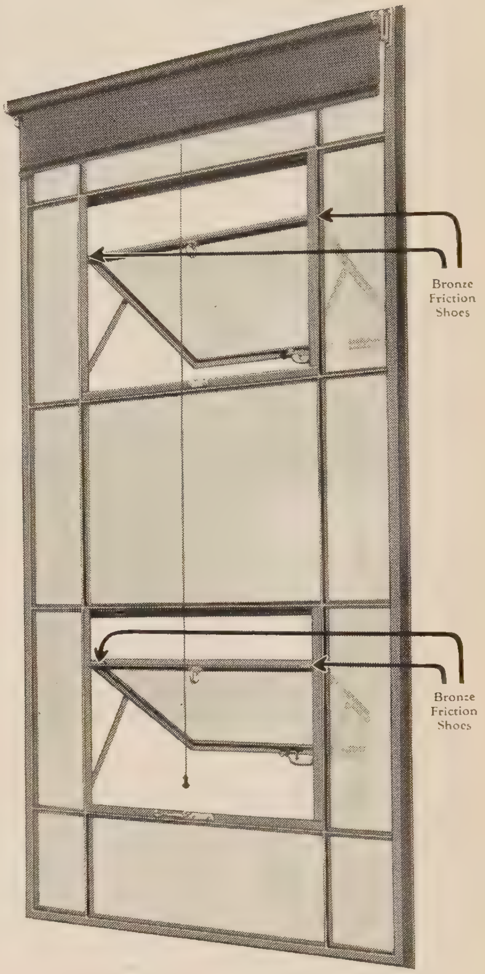

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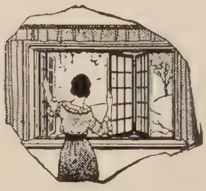
See our Catalogue in SWEET'S

Pages 1394-1399
Portfolio of Detailed Drawings mailed to architects upon request—Filing size

Andrew Hoffman Mfg. Co.

Hoffman Casement Window
900 Steger Building
Chicago



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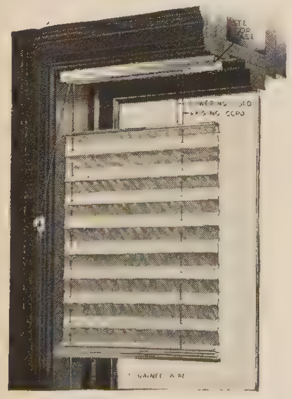
Window Shades

They fold like a fan. Can be raised from the bottom, or lowered from the top. No rattle or fluttering even when the wind blows hard. No springs or rollers to get out of order. No latches to slip, or stick.



Truly decorative—extremely durable. Made of indestructible cloth—thoroughly shrunken and waterproofed. Rain won't hurt them. Easily dry-cleaned. *By far the most economical shade you can buy* considering the many years they last. Experience of thousands of users prove it.

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HOPE'S
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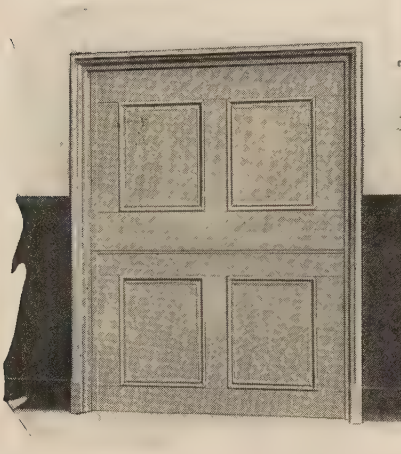
105 *YONGE STREET · TORONTO*

Decatur & Hopkins Building
Boston, Mass.
Wholesale Hardware
Architects: Monks & Johnson, Boston
Contractors: Aberthaw Construction Co.
Boston



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ONE of the important reasons for the installation of PEELLE Freight Elevator Doors in the Decatur and Hopkins Building, is their counterbalanced construction. PEELLE Doors are divided horizontally in the center, the two panels operating inside the elevator shaft on steel chains running over double race ball bearing pulleys. This vertical movement affords not only ease of operation but also full clearance of elevator for loading and unloading.

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PEELLE Freight Elevator DOORS

Counterbalanced-Truckable

These mitered corners do not open, because metal does not shrink.

Doorway trimmed with Knapp Flush Metal Casing

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THE ample and enduring precautions for sanitation which Knapp Sanitary Metal Trim provides, save many, many dollars—every day, every month, for years and years.

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There is a place for Knapp Sanitary Metal Trim in *every room*—a place where it will save maintenance and upkeep costs and retain that attractive "new and modern" appearance.

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Fireproof

VENEERED DOORS

were selected by
Graham, Anderson, Probst and White,
Architects of the

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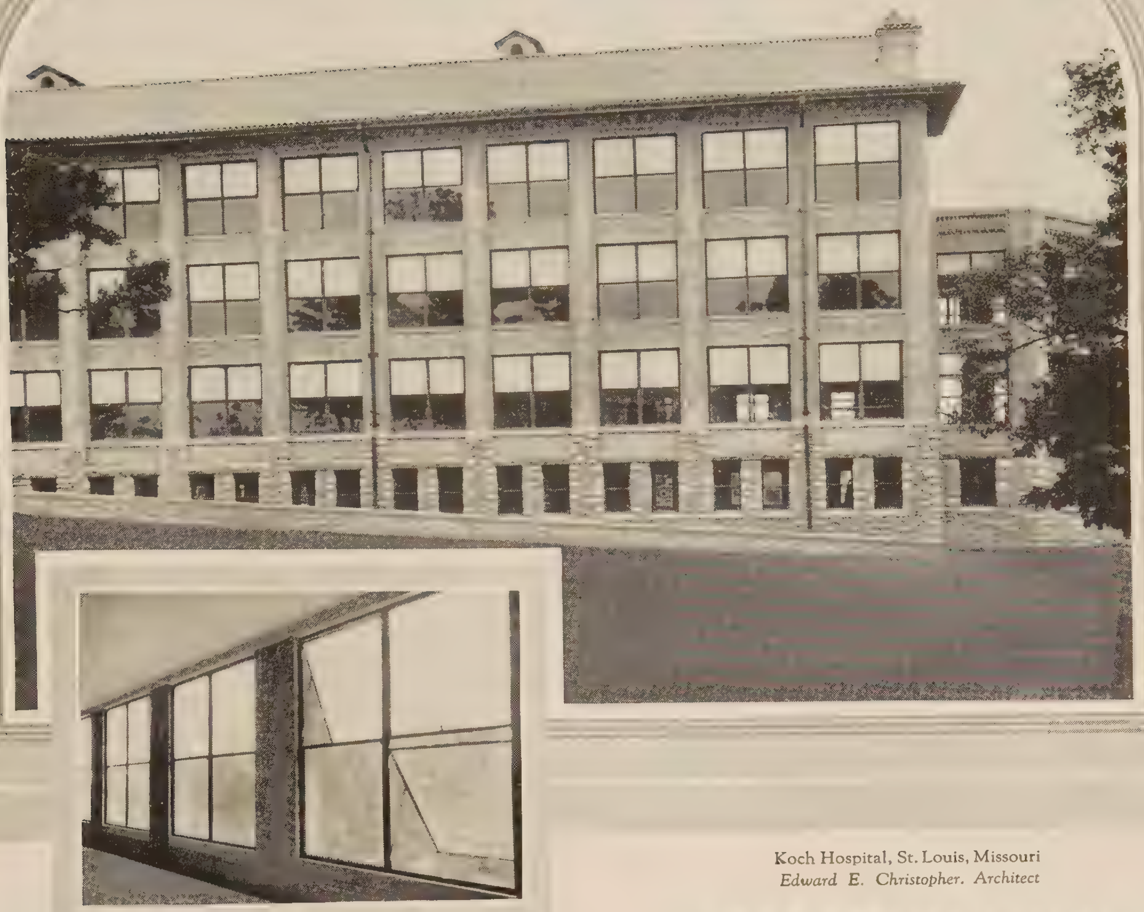
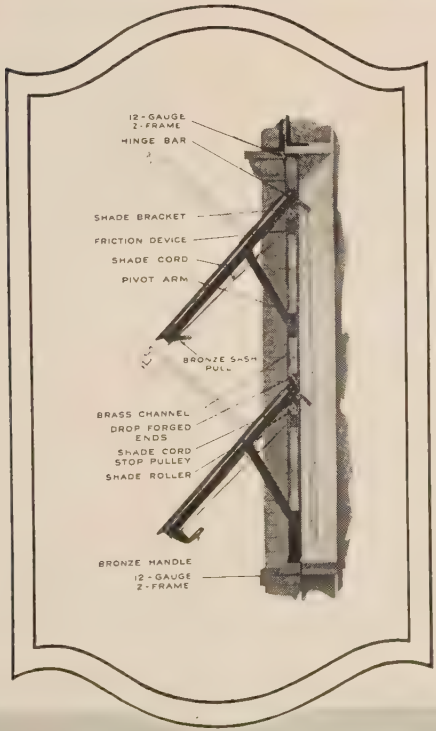


Koch Hospital, St. Louis, Missouri
Edward E. Christopher. Architect



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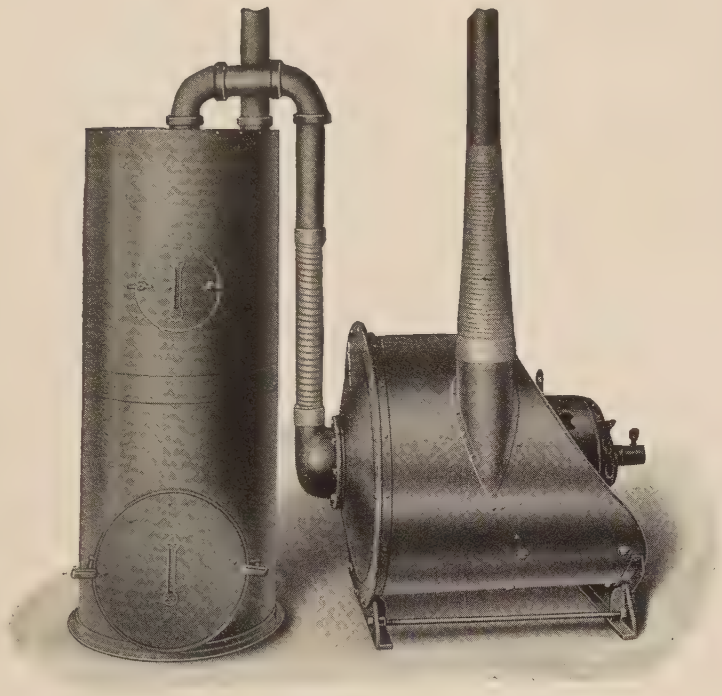

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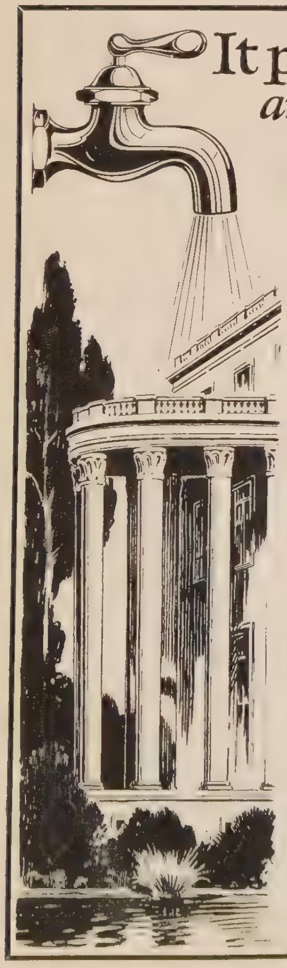
Hartford, Connecticut



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Monarch Automatic Casement Stay
for transoms, pivoted windows, in and out-swinging casements.

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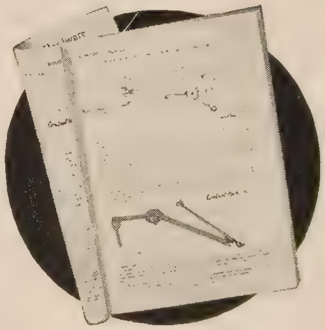
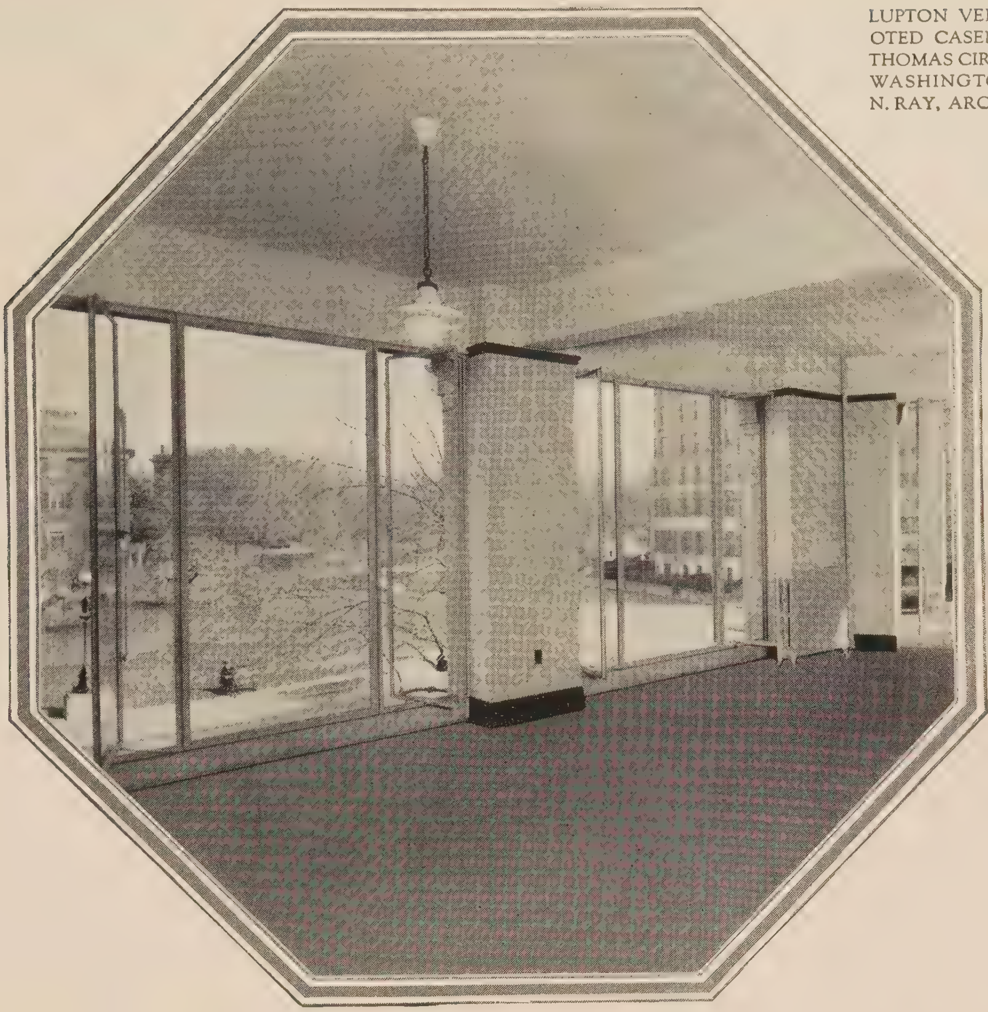
MONARCH
CASEMENT HARDWARE





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SERVICE SECTION
of THE ARCHITECTURAL FORUM

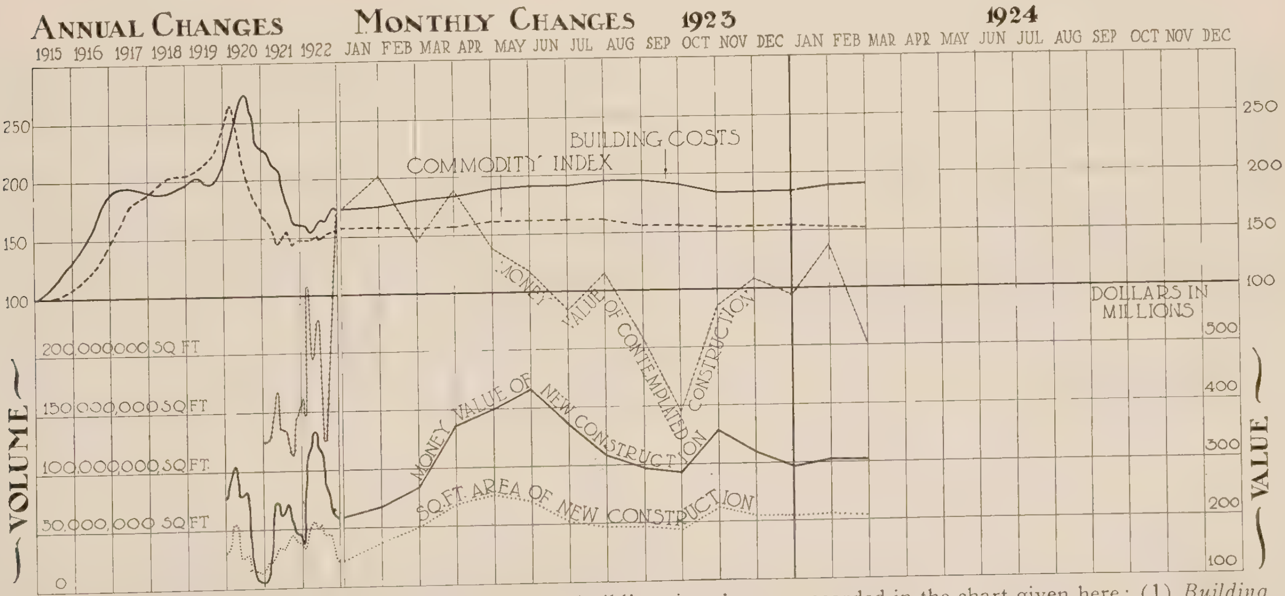
Information on economic aspects of construction and direct service for architects on subjects allied to building, through members of THE FORUM Consultation Committee

The Building Situation

ACCORDING to reports of the F. W. Dodge Company the value of building contracts let in February amounted to approximately $300,000,000. It decreased only about 1 per cent from the record month preceding and increased 7 per cent over February of last year, while January showed an increase of 23 per cent over January, 1923. Thus we enter the year at a considerably greater momentum of actual construction business than in any preceding year, and at present the spring construction season promises an unprecedented volume. It is but natural to expect that there will be some price reaction as a result of this situation, and an upward trend has been noticeable during March. Spring activity will probably carry on to a peak of contracts let in May or June, with a seasonal falling off of contract letting during the remainder of the summer, and as business conditions are basically good, there will probably be a secondary wave of activity in the fall. Unless some unusual condition, such as a buyers' strike, develops, it is quite likely that the index line, "Monthly Value of New Construction," will follow in 1924 a course similar to that of 1923, but indicating a greater volume.

The contemplated new work as represented by "Plans Filed" throughout the country shows a decrease in February as compared with January, but an upward reaction is anticipated during March, although many prospective buyers of building materials are hesitating about going into the market, waiting to see what the reaction of the heavy program of winter building is to be. There is apparently no falling off of interest on the part of speculative and investment builders, and mortgage money is increasing in available volume rather than decreasing.

Direct reports to THE ARCHITECTURAL FORUM from architects in various sections of the country indicate that a large number of interesting plans are under active development and consideration, and it is probable that a great volume of business will come into the market during the next three or four months. Reports from large cities show an increasing number of apartment vacancies, although no decrease in rentals is indicated, and it is evident that this condition has not caused speculative builders to withdraw from the apartment building market.



THESE various important factors of change in the building situation are recorded in the chart given here: (1) *Building Costs.* This includes the cost of labor and materials; the index point is a composite of all available reports in basic materials and labor costs under national averages (2) *Commodity Index.* Index figure determined by the United States Department of Labor. (3) *Money Value of Contemplated Construction.* Value of building for which plans have been filed based on reports of the United States Chamber of Commerce, F. W. Dodge Co., and *Engineering News-Record.* (4) *Money Value of New Construction.* Total valuation of all contracts actually let. The dollar scale is at the right of the chart in millions. (5) *Square Foot Area of New Construction.* The measured volume of new buildings. The square foot measure is at the left of the chart. The variation of distances between the value and volume lines represents a square foot cost which is determined first, by the trend of building costs, and second, by the quality of construction.

Unaffected by sulphuric fumes!

The presence of corrosive fumes in foundries, forge shops, power plants and other buildings makes a roof deck of Pyrobar Gypsum Tile doubly necessary.

Repeated tests show that sulphur fumes, for example, actually *increase* the strength of Pyrobar Roof Tile, and that the steel reinforcing in the tile itself is unaffected. Upkeep is negligible!

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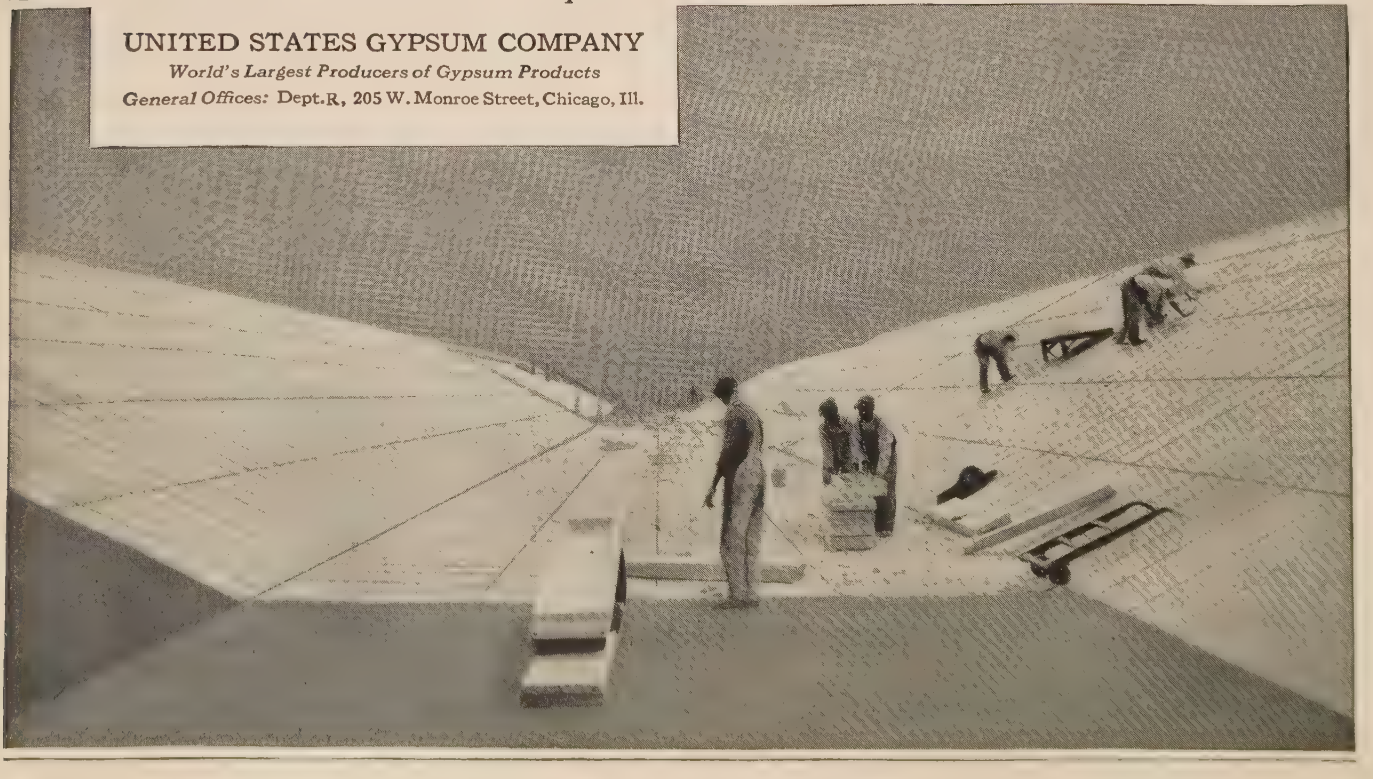
Steel foundry, Pettibone-Mulliken Co., Chicago. Architects: Bierd, Lydon & Grandpre. 139,315 sq. ft. Long Span Pyrobar Tile used



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Selected List of Manufacturers' Literature

FOR THE SERVICE OF ARCHITECTS, ENGINEERS, DECORATORS, AND CONTRACTORS

The publications listed in these columns are the most important of those issued by leading manufacturers identified with the building industry. They may be had without charge, unless otherwise noted, by applying on your business stationery to *The Architectural Forum*, 383 Madison Ave., New York, or the manufacturer direct, in which case kindly mention this publication.

ACOUSTICS

Johns-Manville, Inc., Madison Ave. & 41st St., New York, N. Y.

Architectural Acoustics. Booklet. 6 x 9 in. 24 pp. Illustrated. Treatise on the correction of architectural acoustics in churches, schools, hospitals, office buildings and other places.

Macoustic Engineering Company, Inc., 323 Bulkley Building, Cleveland, Ohio.

Acoustics Folder 3¼ x 6¼ in. 2 pp. Not illustrated. Contains brief story of the care in the selection of the architect for the Cleveland Public Hall; the reasons for selecting him; and brief reference to "Sound Direction and Control" principles.

Offering to Architects Folder 8½ x 11 in. 2 pp. Illustrated. Contains comments on acoustics of the Cleveland Auditorium by leading artists; list of buildings treated by Macoustic "Sound Direction and Control" principles; many features as to application, appearance, color treatment, financial saving, and complete explanation of our engineering service.

Explaining Macoustic Folder 7¼ x 10 in. 1 Sheet. Illustrated. A sheet containing information as to how an architect can avail himself of the engineering service which we have to offer.

ASH HOISTS—ELECTRIC AND HAND POWER

Gillis & Geoghegan, 544 West Broadway, New York, N. Y.

General Catalog. 8½ x 11 in. 20 pp. Fully illustrated. Contains specifications in two forms (with manufacturer's name and without). Detail ¼" scale for each telescopic model and special material-handling section.

The Man-Saving Load Lifter, 5⅞ x 8⅞ in. 8 pp. Illustrated. Describes G&G Telescopic and Non-Telescopic Hoists for handling material in factories.

BATHROOM ACCESSORIES

The Fairfacts Company, 234 West 14th St., New York, N. Y.

Catalog F. 4 x 9 in. 12 pp. Illustrated. Describes full line of china fittings for bathrooms.

The Perfect Bathroom. Booklet. 4 x 9 in. 12 pp. Illustrated. Shows full line, Biltin and Projecting Types, installed. For architects and clients.

BOILERS—See Heating Equipment

BRICK

American Face Brick Association, 1751 Peoples Life Bldg., Chicago, Ill.

The story of Brick. Third Edition. Booklet. 7 x 9¼ in. 55 pp. Illustrated. Presents the merits of face-brick from structural and artistic standpoints. Tables of comparative costs.

The Home of Beauty. Fourth Edition. Book. 8 x 10 in. 72 pp. Color plates. Presents fifty designs for small face-brick houses submitted in national competition by architects. Text by Aymar Embury II, Architect. Price 50c.

Bungalow and small house plans. Booklets. 8½ x 11 in. 50 pp. Illustrated. Four booklets, showing a variety of designs for small face-brick houses, covering 3, 4, 5, 6, 7 and 8 room houses. Price, 25c. each, $1 for the set.

A Manual of Face-Brick Construction. Booklet. 8½ x 11 in. Textbook on construction of the brick wall and various uses of face brick. 31 colored plates of brick houses with plans. Price, $1.00.

Architectural Details in Brickwork. Series 1, 2, 3. 8½ x 11 in. Very useful to the architect or draftsman. Sent free to architects applying on their office stationery. To others $1.50.

BUILDING FINANCE

S. W. Straus & Co., 565 Fifth Ave., New York, N. Y.

The Straus Plan of Financing. Booklet. 8 x 6 in. 24 pp. Illustrated. Describes Straus system of co-operating with Architects, Builders, Engineers and Brokers in financing important building operations; also the making of construction loans on larger and better properties in our large cities.

Forty-two Years Without Loss to Any Investor. Booklet. 8 x 5 in. 38 pp. Illustrated. A carefully prepared booklet for the thinking investor. Describes Straus bonds, the property upon which loans are made, and explains the Straus plan of safeguards which made possible the 42-year record.

BUILDING STONE—See Stone, Building

BUILDING, STANDARD STEEL

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.

Truscon Standard Building Catalog. 8½ x 11 in. 48 pp. Contains data and illustrations.

BUILDING, STEEL PRODUCTS FOR

Massillon Steel Joist Company, The, Massillon, Ohio.

Massillon Bar Joists. Pamphlet. 8½ x 11 in. 8 pp. Illustrated. Pamphlet containing general information descriptive of Massillon Bar Joist Fireproof Floor Construction, with cuts showing methods of construction and photographs of installations.

Detailed Dimensions, Safe Loading Tables, Details of Construction. Catalog. 8½ x 11 in. 32 pp. Catalog. Illustrated.

Catalog containing complete detailed information about each Massillon Bar Joist Structural Unit.

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.

Truscon Data Book. Catalog. 3½ x 6 in. 128 pp. Illustrated. Contains complete information with illustrations on Truscon reinforcing steel, steel windows, metal lath, standard buildings, concrete inserts, steel joists, pressed steel stamping and chemical products.

CARPETS, IMPORTED

Kent-Costikyan Trading Company, Inc., 484 Fifth Ave., New York, N. Y.

Rugs. Catalogue. 9½ x 6½. 56 pp. Illustrated. Illustrates and describes an unusual collection of Oriental and Occidental rugs with stock list.

CEMENT

Carney Company, The, Mankato, Minn. Booklet. 8 x 10 in. 24 pp. Illustrated. Complete information on product, showing prominent buildings in which this cement has been used.

Booklet. 8½ x 11 in. 8 pp. Illustrated. Attractive circular describing late improvements in manufacturing Carney; cost, comparisons, physical tests, specifications and testimonials. Contains four-page list of Carney-built buildings in all parts of the United States with architects' and contractors' names.

Louisville Cement Co., 315 Guthrie St., Louisville, Ky.

Brixment. Booklet. 7½ x 5 in. 16 pp. Illustrated. Brixment, what it is, what it does, how it does it and why.

Sandusky Cement Co., Dept. F, Cleveland, Ohio.

Medusa Waterproof White Portland Cement. Booklet. 8½ x 11 in. 32 pp. Illustrated.

Medusa Integral Waterproofing Powder and Paste. Booklet. 8½ x 11 in. 88 pp. and cover.

CONDUIT

National Metal Molding Co., 1113 Fulton Building, Pittsburgh, Pa.

Bulletin of all National Metal Molding Products. In correspondence folder. 9½ x 11½ in.

Sheraduct. Circular. 5 x 8 in. Illustrated.

Flexsteel. Circular. 5 x in. Illustrated.

CONSTRUCTION, FIREPROOF

Massillon Steel Joist Co., Massillon, Ohio.

Massillon Bar Joists. Brochure. 8½ x 11 in. Illustrated. Full data regarding the steel used for construction of floors in fireproof buildings of various kinds.

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.

Standard Fire Proofing Bulletin 171. 8½ x 11 in. 32 pp. Illustrated. A treatise on fire proof floor construction.

Northwestern Expanded Metal Co., 934 Old Colony Building, Chicago, Ill.

Fireproof Construction Catalog, 6 x 9 in. 72 pp. Illustrated. Handbook of practical suggestions for architects and contractors. Describing Nemco Expanded Metal Lath.

DAMPPROOFING

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.

Specification Sheet. 8½ x 11 in. Descriptions and specifications of compounds for dampproofing interior and exterior surfaces.

DECORATIVE TILES

The Rookwood Pottery Company, Cincinnati, Ohio.

Halftone reproductions and photographic prints showing various tile treatments. 9½ x 11½ in.

DOORS AND TRIM, METAL

The American Brass Company, Waterbury, Conn.

Illustrated pamphlet describing use and adaptability of Extruded Architectural Bronze Shapes for metal window frames, doors, grilles, counter screens, etc.

The Compound & Pyrono Door Company, St. Joseph, Mich.

Pyrono Handbook for Architects and Contractors. 8½ x 11 in. 16 pp. Contains full information regarding Pyrono Fireproof Veneered Doors and Trim, with complete details and specifications.

Pyrono details in sheet form for tracing.

Dahlstrom Metallic Door Company, 425 Buffalo Street, Jamestown, N. Y.

Architectural Catalog. 10 x 14 in. 46 pp. 11 sections. Illustrated. Catalog showing our regular styles and types of hollow metal doors and interior trim. Various types of frames and other architectural shapes also illustrated.

Richards-Wilcox Mfg. Co., Aurora, Ill.

Fire Doors and Hardware. Booklet. 8½ x 11 in. 64 pp. Illustrated. Describes entire line of tin-clad and corrugated fire-doors, complete with automatic closers, track hangers and all the latest equipment—all approved and labeled by Underwriters' Laboratories.

DRAFTING MATERIALS

American Lead Pencil Company, 220 Fifth Ave., New York, N. Y.

VENUS Pencil in Mechanical Drafting. Booklet C20. 6 x 9 in. 16 pp. Illustrated. Describes the many possibilities of the VENUS for technical drawing.

Catalog. 3¾ x 8¾ in. 25 pp. Illustrated. Describes pencils, holders, erasers, etc.

DUMBWAITERS

Kaestner & Hecht Co., Chicago, Ill.

Bulletin 520. Describes K. & H. Co. electric dumbwaiters. 8 pp.

Sedgwick Machine Works, 151 West 15th Street, New York.

Catalog and Service Sheets. Standard specifications, plans and prices for various types, etc. 4¼ x 8¼ in. 60 pp. Illustrated.

ELECTRICAL EQUIPMENT

The Arrow Electric Company, Hartford, Connecticut.

Catalog of Complete Wiring Devices. 7½ x 10 in. 160 pages. Illustrated. Also small pocket edition.

Manual of Electrical Wiring Devices for Use in Limited Space. This manual will be very useful in the installation of receptacles and switches in shallow partitions as it gives specifications for such work.

Specification sheets for Arrow flush tumbler switches, shallow flush push button switches and double T slot flush receptacles.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 83*

ELECTRICAL EQUIPMENT—Continued

Connecticut Electric Mfg. Co., Bridgeport, Conn.

Up-to-date Electrical Specialties Pocket Catalog. 3 x 4¾ in. 305 pp. Illustrated. Gives size, weight, prices and data for sockets, receptacles, rosettes, switches, cut-outs and other wiring devices.

Connecticut Toggles Switches Folder. 3½ x 6½ in. 4 pp. Illustrated. Describes latest idea in electric switch and gives list price, catalog numbers and schedules.

Connecticut Sockets. Folder. 3½ x 6½ in. 6 pp. Illustrated. Describes Key-Keyless and Push Button Sockets and gives prices and catalog numbers.

Frink, Inc., I. P., 24th Street and 10th Avenue, New York, N. Y.

Catalog 415. 8½ x 11 in. 46 pp. Photographs and scaled cross-sections. Specialized bank lighting, screen and partition reflectors, double and single desk reflectors and Polaralite Signs.

General Electric Company, Schenectady, N. Y.

Wires and Cables. Booklet. 8 x 10½ in. 85 pp. Illustrated. Four Bulletins in a binder, describing wires and cables in general, conductor insulated with vulcanized rubber compound, varnished cambre and paper insulated cables, splicing materials and junction boxes for cable installations, armored cables.

Electric Fans. Folder. 6 pp. 3¼ x 6 in. Illustrated. Describes 1922 line of electric fans, giving catalog numbers, voltages and frequencies.

Reliable Wiring Devices. Catalog. 3 x 4⅝ in. 206 pp. Illustrated. Pocket catalog giving prices, schedule classifications and data for socket receptacles, switches, rosettes, cutouts and fuses for miscellaneous devices.

Lighting of Public Buildings. Bulletin. 6 x 9 in. 25 pp. Illustrated. Describes lighting of galleries, banks, museums, libraries, municipal, county and state buildings.

The Edwin F. Guth Co., 2615 Washington Ave., St. Louis, Mo.

Bracolite Catalog No. 10, 10½ x 8 in. 28 pages. Illustrated. Catalog listing Brascolite fixtures in wide variety of plain and decorative types. Contains information of value in planning a lighting installation.

Bank and Office Building Catalog, 10½ x 8 in. 16 pages. Illustrated. Catalog listing a selected line of fixture equipment for application to all outlets in bank or office building or similar buildings.

Architectural Bulletins, Series of 5. 10½ x 8 in. 28-64-44-28-44 pages. Illustrated. A series of five bulletins, each treating upon the application of lighting to one particular class of service. Hospitals; Banks and Office Buildings; Schools, Colleges and Y. M. C. A. Buildings; Church and Fraternal Buildings; Commercial Service.

Special Hospital Catalog. 10½ x 8 in. 9 pages. Illustrated. Illustrates a special selection of fixture equipment for hospital use including types suitable for all outlets.

Hart & Hegeman Mfg. Co., The, 342 Capital Avenue, Hartford, Conn.

The Line of Least Resistance Catalog R.-10-1/24 x 7⅛ in. 152 pp. Illustrated. Complete display of switches, sockets, accessories and wiring devices with brief description.

A new H & H Switch. Leaflet. 3½ x 6 in. 4 pp. Illustrated. Illustrates a new H & H composition base push switch of De Luxe quality.

Tumbler Switches. Booklet. 3½ x 6 in. 6 pp. Illustrated. Shows complete line of H & H Tumbler Switches.

H & H Elexits. Booklet. 8 x 10¼ in. Illustrated. Shows new complete line of Elexits—places for lights. May be used for Wall Receptacles or Electric Fixtures.

The Holtzer-Cabot Electric Co., Amory St., Boston 19, Mass.

Signaling Systems for Hospitals. Brochure. 8½ x 11 in. 42 pp. Illustrated. Contains complete data covering Nurse's Call, Doctor's Call, "In" and "Out," Fire Alarm, Watchman's Clock and Telephone Systems.

Signaling Systems for Schools. Brochure. 8½ x 11 in. 47 pp. Illustrated. Contains complete data covering Telephone Systems, Program Bells, Fire-Alarm Systems, Low Tension Power Plant and Laboratory Equipment.

Kohler Co., Kohler, Wis.

Kohler Automatic Power and Light 110 Volt D. C. Booklet. 5 x 7 in. 32 pp. Illustrated. Describes a standard voltage automatic, electric power and light plant for isolated homes.

Simplex Wire & Cable Co., 201 Devonshire Street, Boston, Mass.

Simplex Manual Catalog and reference book. 6¾ x 4¼ in. 92 pp. Contains in addition to information regarding Simplex products, tables and data for the ready reference of architects, electrical engineers and contractors.

Specification No. 2053. For Simcore Wires and Cables. Various sizes of Conductor-Rubber Insulation.

Varnum Door Engine Company, 949 West 16th St., Los Angeles, Calif.

Varnum Electric Door Engines. Booklet. 5 x 7¾ in. 16 pp. Illustrated. Descriptive booklet containing illustrations and list of representative institutions now using Varnum Door Engines.

Western Electric Co., 195 Broadway, New York, N. Y.

Western Electric Inter-Phones for Apartment Houses. Booklet. 5¾ x 6¾ in. 16 pp. Illustrated. Illustrates and describes use of Inter-Phones in Apartment Houses.

Installing and Maintaining Western Electric Inter-Phones in addition to giving general information on layout of systems; details are supplied on individual Inter-Phone Systems, listing battery and wiring requirements.

Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa.

Safety Switches. Folder F-4434 B. 3½ x 6 in. 2 pp. The 100 per cent Safe Service Entrance Switch.

Meter Service Switches. Booklet. F-4484. 3½ x 6 in. 16 pp.

Panel Boards. Catalog 22A. 8½ x 11 in. 16 pp. Illustrated.

What Fans Are For. Booklet F-4520. 3½ x 6 in. 16 pp. Illustrated in color.

ELEVATORS

Kaestner & Hecht Co., Chicago, Ill.

Bulletin 500. Contains 32 pp. Giving general information on passenger elevators for high buildings.

Bulletin 530. Interlocks for Passenger and Freight Elevators.

Bulletin Signals for Passenger and Freight Elevators.

Otis Elevator Company, 11th Ave. & 26th Street, New York, N. Y.

Otis Push Button Controlled Elevators. Booklet. 6 x 9 in. 56 pp. Illustrated. Detailed description of Otis Push Button Elevators. Their uses in residences, stores, institutions, apartment houses, business offices and banks, etc.

Otis Geared and Gearless Traction Elevators of All Types. Descriptive leaflets. 8½ x 11 in. Illustrated. Full details of machines, motors and controllers for these types.

Escalators. Booklet. 8½ x 11 in. 22 pp. Illustrated. Describes use of escalators in subways, department stores, theatres and industrial buildings. Also included elevators and dock elevators.

Richards-Wilcox Mfg. Co., Aurora, Ill.

Elevators. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes complete line of "Ideal" elevator-door hardware and checking devices, also automatic safety devices.

Sedgwick Machine Works, 151 West 15th Street, New York.

Catalog and descriptive pamphlets. 4¼ x 8¼ in. 70 pp. Illustrated. Descriptive pamphlets on hand power freight elevators, sidewalk elevators, automobile elevators, etc.

FENCES

The Stewart Iron Works Company, Cincinnati, Ohio.

Book of Designs "B." 9 x 12 in. 80 pp. Illustrated. Book of designs illustrated from photographs of ornamental iron fence and entrance gates erected by us. Valuable to architects.

FIRE DOORS—See Doors, Windows and Trim, Metal

FIREPLACE EQUIPMENT

Covert Co., H. W., 137 E. 46th Street, New York, N. Y.

Hints on Fireplace Construction. Catalog. 5⅝ x 8½ in. 11 pp. Illustrated. Diagrams of construction and installation of Covert "Improved" and "Old Style" Dampers and Smoke Chambers. Also illustrations of Covert brass and wrought iron Fireplace Fittings.

FIREPROOFING—See also Construction, Fireproof

The General Fireproofing Company, Youngstown, Ohio.

Fireproofing Handbook. 64 pp. 8½ x 11 in. Illustrated. Gives methods of construction, specifications, data on Herringbone metal lath, steel tile, Trussit solid partitions, steel lumber, self-centering formless concrete construction.

FLOOR HARDENERS (CHEMICAL)

General Chemical Company, 40 Rector Street, New York City.

Hard-n-tyte Engineering Service. Booklet. 16 pp. 7½ x 10½ in. Describes Hard-n-tyte and its uses in connection with surface treatments of concrete with illustrations of specific applications.

The Hard-n-tyte Specification Folder. 2 pp. 7½ x 10½ in. Gives exact specifications for concrete floor finish.

Sample Bond. 9 x 14½ in. Duplicate of Five Year Guaranty Bond furnished on floors treated with Hard-n-tyte.

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.

Lapidolith, the liquid chemical hardener. Complete sets of specifications for every building type in which concrete floors are used, with descriptions and results of tests.

FLOORING

Armstrong Cork & Insulation Co., 132 24th Street, Pittsburgh, Pa.

Linotile Floors for Public and Semi-Public Buildings. 7½ x 10⅜ in. 36 pp. Linotile Floors for Residences. 7½ x 10⅜ in. 32 pp.

Armstrong's Cork Tile. Revised Edition. Booklet. 24 pp. 5 x 7 in. Illustrated in color. Contains complete specifications.

Armstrong Cork Co. (Linoleum Division), Lancaster, Pa.

Armstrong's Linoleum Floors. Catalog. 8½ x 11 in. 54 pp. Color plates. A technical treatise on linoleum, including table of gauges and weights and specifications for installing linoleum floors.

Decorative Floors. Booklet. 11¼ x 15 in. 16 pp. Color plates.

Armstrong's Linoleum Pattern Book, 1924. Catalog. 3½ x 6 in. 208 pp. Color Plates. Reproductions in color of all patterns of linoleum and cork carpet in the Armstrong line.

Quality Sample Book. Two books. 3½ x 5¾ in. Showing all gauges and thicknesses in the Armstrong line of linoleum and cork carpets.

Detailed Directions for Laying and Caring for Linoleum. Handbook. 5 x 7 in. 48 pp. Instructions for linoleum layers and others interested in learning most satisfactory methods of laying and taking care of linoleum.

Business Floors. Booklet. 6 x 9 in. 48 pp. Illustrated in color. Explains use of linoleum for offices, stores, etc., with reproductions in color of suitable patterns, also specifications and instructions for laying.

Bonded Floors Company, Inc., 1421 Chestnut St., Philadelphia, Pa.

Gold-Seal Treadlite Tile. Booklet. 7⅞ x 10¾ in. 32 pp. Illustrated. An illustrated booklet showing Treadlite Tile installations and containing general information, specifications, etc., with reproductions of the product in color.

Gold-Seal Rubber Tile Folder. Folder 7⅞ x 10¾ in. 8 pp. Illustrated. A folder describing the usages and composition of Rubber Tile. Profusely illustrated with pictures of installations and reproductions of the product in color.

Galassi Company, 153 East 38th Street, New York, N. Y.

Suggesting a Standard Specification for Terrazzo Work Booklet. Specifications for the use of terrazzo.

Muller Co., Franklyn, R., Waukegan, Ill.

Asbestone Composition Flooring. Circulars, 8½ x 11 in. Descriptions and Specifications.

The Nairn Linoleum Company, 179 Belgrove Drive, Kearny, N. J.

Linoleum Booklet. 5½ x 8½ in. 68 pp. Illustrated in color. Reproductions in color of Inlaid, Printed, Plain and Battleship Linoleum; also Cork Carpets and Felt Base Floor Coverings.

The Linoleum Data Book. 11½ x 8⅝ in. 56 pp. Illustrated. Showing method of laying and samples of Nairn Linoleum with several illustrations of buildings where it has been used.

Residence of Mr. H. W. Lowell
Lockport, New York

Mr. W. George MacTarnaghan
Architect, New York

One hundred dollars for lifetime service

ANACONDA BRASS PIPE specified for the hot water lines supplying three bathrooms, a wash room and laundry in this house increased the cost of the plumbing installation one hundred dollars.

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In Canada: ANACONDA AMERICAN BRASS LIMITED, NEW TORONTO, ONTARIO

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 84*

FLOORING—Continued

Ritter Lumber Company, W. M., 115 E. Rich St., Columbus, Ohio. Contains information on how Oak Flooring is made. Why How to select the right kind of Oak Flooring. Grades of Oak from the Appalachian region makes the best Flooring.

Ritter Oak Flooring. Booklet. 5 x 7 - in. 31 pp. Illustrated. Flooring. How Oak Flooring should be laid, nailed and scraped. How to care for Oak Flooring.

Ritter Appalachian Oak Flooring Booklet. 8 x 11 in. 16 pp. Illustrated. Gives illustrated information how Flooring is manufactured and eight reasons why Appalachian Oak Flooring will assure architects the floor beauty and serviceability they are looking for in Oak Flooring.

Rodd Company, The, Century Bldg., Pittsburgh, Pa.

Redwood Block Floor. Booklet. 4 x 9 in. Illustrated. Contains technical information on Rodd Floors of California Redwood Blocks. Also specifications.

FURNACES—See Heating Equipment

FURNITURE

Allen, Louis L., 521 Madison Ave., New York, N. Y.

Booklet. 5 x 7½ in. Illustrated. Issued twice a year, listing many antique pieces of furniture, old oak and pine paneling and garden figures: fountains, bird baths, sundials, etc.

American Seating Co., 14 E. Jackson Blvd., Chicago, Ill.

Ars Ecclesiastica Booklet. 8½ x 11 in. 48 pp. Illustrations of church fitments in carved wood.

Theatre Chairs. Booklet. 6 x 9 in. 48 pp. Illustrations of theatre chairs.

Kensington Mfg. Company, 14 East 32nd St., New York, N. Y.

Photographs and full description of hand-made furniture in all the period styles furnished promptly in response to a specific inquiry.

Illustrated booklet indicative of the scope, character and decorative quality of Kensington furniture mailed on request.

Servidor Company, 101 Park Avenue, New York, N. Y.

"Servidor Guest Room Doors"—Specification Data, Detail and Descriptive. Size 9½ x 12 in. 4 pages.

Summary of Servidor Service. Summarizes Servidor Service; outlines its merits and advantages and new revenue producing power. Size 7¼ x 10¼ in. 8 pages.

Guests' Service Book. In 4 colors. Sample of 8th Edition. Supplied to hotels, apartment hotels and clubs operating Servidor Service. 7¼ x 10½ in. 27 pages.

Bulletin A-3 "The Eternal Tip." Size 6½ x 9 in. 8 pages.

Bulletin A-8 "Servidors As An Investment." Size 6½ x 9 in. 8 pages.

GARDEN ACCESSORIES

Davey Tree Expert Company, The, 907 Elm Street, Kent, Ohio.

"When Your Trees Need The Tree Surgeon." Booklet. 16 pages. 8 x 9¼ in. Illustrated. Lists and explains a number of serious tree troubles of common occurrence; contrasts the scientific methods used by properly trained and conscientious men to remedy these troubles, as compared to the work of unscrupulous or untrained men.

GLASS CONSTRUCTION

Mississippi Wire Glass, 220 Fifth Avenue, New York.

Mississippi Wire Glass. Catalog. 3⅞ x 8½ in. 32 pp. Illustrated. Covers the complete line.

Plate Glass Mfrs. of America. First National Bank Bldg., Pittsburg, Pa.

Plate Glass. Booklet. 5¾ x 9¼ in. 12 pp. Describes manufacture and use of plate glass, with sizes.

GRANITE—See Stone, Building

HARDWARE

Cutler Mail Chute Company, Rochester, N. Y.

Cutler Mail Chute Model F. Booklet. 4x 9¼ in. 8 pp. Illustrated.

McCabe Hanger Manufacturing Company, 425 West 25th St., New York, N. Y.

Special Folding and Accordion Door Hangers. Booklet. 6 x 9 in. 8 pp. Illustrated. Booklet with complete description of various types of folding and accordion door hangers. Full size details upon request.

McKinney Mfg. Co., Pittsburgh, Pa.

McKinney Complete Garage Hardware Sets. Catalog. 6¾ x 10 in. 20 pp. Illustrated. Describes full line of complete garage hardware sets for all kinds of entrances, with views of typical entrances and sketches.

McKinney Hinges and Butts. General Catalog. 6¾ x 10 in. Illustrates and describes complete line of McKinney wrought builders' hardware products, including hinges, butts, door hangers and track, latches, garage hardware and specialties.

Richard-Wilcox Mfg. Co., Aurora, Ill.

Distinctive Garage Door Hardware. Booklet. 8½ x 11 inches. 65 pp. Illustrated. Complete information accompanied by data and illustrations on different kinds of garage door hardware.

Sargent & Company, New Haven, Conn.

Sargent Locks and Hardware, Architects' Edition. 9 x 12 in. 762 pages. Illustrated. The latest complete catalogue of Locks and Hardware.

Details to Which Standard Hardware Can Be Applied. Booklet 6 pp. 9 x 12 inches, illustrated. Treats with diagrams, portions of doors and windows to which hardware can be applied.

Vonnegut Hardware Co., Indianapolis, Ind.

Von Duprin Self-Releasing Fire Exit Devices. Catalog. 12F. 8 x 11 in. 41 pp. Illustrated.

"Saving Lives." Booklet. 3¼ x 6 in. 16 pp. Illustrated. A brief outline why Self-Releasing Fire Exit Devices should be used.

HEATING EQUIPMENT

American District Steam Company, North Tonawanda, N. Y.

Adsco Heating. Bulletin No. 158. 6¼ x 9¼ in. 16 pp. Illustrated. Describes Adsco System of Atmospheric Steam Heating, its principle and operation.

Catalog No. 21-AF. 6 x 9 in. 200 pp. Illustrated. Lists and describes the full line of equipment and devices manufactured for use on underground and interior steam mains, expansion joints, steam meters, condensation meters, traps, flange fittings, angle fittings, manhole curbs, alignment guides, etc.

HEATING EQUIPMENT—Continued

James B. Clow & Sons, 534 S. Franklin Street, Chicago, Ill.

Gasteam. Catalog. 6 x 9 in. 16 pp. Illustrated. New radiator using gas for fuel.

Cox Stove Company, Abram, American and Dauphin Sts., Philadelphia, Pa.

"Make Wintry Days Happy Days." Folder. 3½ x 6¼ in. 8 pp. Illustrated. Two folders. One describes in detail Novelty Marvel Warm Air Furnaces. The other shows the Pipeless Novelty Marvel.

"Novelty Boilers 76A." Booklet. 6½ x 3¾. 32 pp. Illustrated. Descriptive of entire line of boilers, including Novelty Round Boilers, Side-Feed Sectional Boilers 18-25-30-40 Series, and Carburetor Boilers, 30 and 40 Series; Novelty Water Heaters.

Excelso Specialty Works, 119 Clinton St., Buffalo, N. Y.

Excelso Water Heater. Booklet. 12 pp. 3 x 6 in. Illustrated. Describing the new Excelso method of generating domestic hot water in connection with heating boilers. (Firepot Coil eliminated.)

The Fulton Company, Knoxville, Tenn.

Sylphon Temperature Regulators. Bulletin T-103. 8½ x 11 in. 16 pp. Complete data on Sylphon temperature regulators for air and liquids. Catalog 100, complete line Sylphon Heating Specialties.

Damper Regulators, Air and Vent Valves. Catalog No. 100. 3¾ x 6¼ in. Sylphon Damper Regulators for steam, hot water and vapor systems. Sylphon Air and Vent Valves.

Illinois Engineering Co., Racine Ave. at 21st St., Chicago, Ill.

Vapor Heat Bulletin 21. 8½ x 11 in. 32 pp. Illustrated. Contains new and original data on Vapor Heating. Rules for computing radiation, pipe sizes, radiator tappings. Steam table showing temperature of steam and vapor at various pressures, also description of Illinois Vapor Specialties.

Johnson Service Company, 149 Michigan St., Milwaukee, Wis.

Regulation of Temperature and Humidity. Booklet. 11¼ x 8½ in. 64 pp. Illustrated. Describes Johnson system of pneumatic, automatic regulation of temperature and humidity, and illustrates thermostats, valves, air compressors, dampers, and other parts.

Johnson Electric Thermostats, Valves and Controllers. Booklet. 6⅛ x 3½ in. 24 pp. Illustrated. Excellent plates showing electric thermostats and controllers.

Kelsey Heating Company, James St., Syracuse, N. Y.

Booklet No. 5. 4 x 9 in. 32 pp. Illustrated. A dealers' booklet showing the Kelsey Warm Air Generator Method of warming and distributing air. Gives dimensions, heating capacities, weights, kind of coal recommended, and shows the mechanical and gravity system of heating homes, churches and schools.

Monroe Pipeless Booklet, 4½ x 8 in. 20 pp. Illustrated.

Monroe Tubular Heater. Booklet. 4½ x 8 in. 20 pp. Illustrated. General Booklet giving capacities, dimensions, weights, etc.

Syracuse Pipeless Booklet. 4½ x 8 in. 12 pp. Illustrated. General Booklet giving sizes and capacities.

Kewanee Boiler Co., Kewanee, Ill.

Kewanee on the Job. Catalog. 8½ x 11 in. 80 pp. Illustrated. Showing installations of Kewanee boilers, water heaters, radiators, etc.

Catalog No. 73. 6 x 9 in. 35 pp. Illustrated. Describes Kewanee steel power boilers with complete specifications.

Utica Heater Company, Utica, N. Y.

Imperial Round and Square Boilers and Supplies. Catalog. 3½ x 6½ in. Gives complete data on small heaters.

Special Folders. 8½ x 11 in. "Warmth and Comfort," describing the scientifically correct NEW IDEA pipeless furnaces. "SUPERIOR Warm Air Pipe Furnaces," a standard line of heating equipment for over forty years. "SUPER-SMOKELESS Pipe and Pipeless Furnaces," a new and remarkably efficient warm air heater, burning cheap soft coal without smoke—utilizing the principle of the Bunsen Burner.

"Imperial Sectional Square Boilers," for hard coal heating of all types of buildings.

Utica Imperial SUPER-SMOKELESS Boiler. Catalog. 8½ x 11 in. Consists of the following seven bulletins, either loose or bound together: (1) School Heating Bulletin. (2) Public Building Bulletin. (3) Theatre Heating Bulletin. (4) Churches and Religious Institutions. (5) Residences, Apartments and Hotels. (6) Offices, Industrial Buildings and Garages. (7) Technical Bulletin describing patented Bunsen Burner design and construction of the SUPER-SMOKELESS BOILER, which burns the cheapest grades of soft coal smokelessly and operates equally well with hard coal, coke or fuel oil.

HEAT REGULATORS—See Heating Equipment

HEATING AND VENTILATING

Hoffman Specialty Company, Inc., 512 Fifth Ave., New York, N. Y.

Controlled Heat Booklet. 5½ x 8½ in. 28 pp.

The principles of vapor vacuum heat described in simple language for the consumer or layman.

Locking the Door Against the Heat Thief Booklet. 5½ x 8½ in. 16 pp.

Describes No. 2 Hoffman Vacuum Valves and the principle of "Vacuum-izing" a single pipe steam heating system in consumer language.

United States Radiator Corporation, Detroit, Mich.

The Complete Line Catalog. 6⅜ x 3¾ in. 270 pp. Illustrated. Giving complete information and engineering data on Capital and Winchester Boilers.

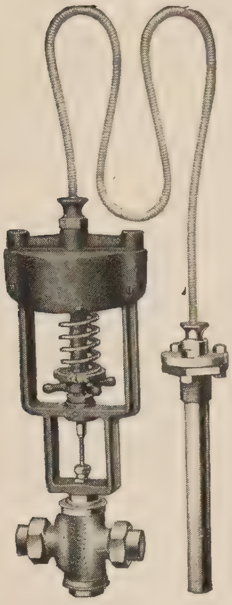
HOISTS—See Ash Hoists

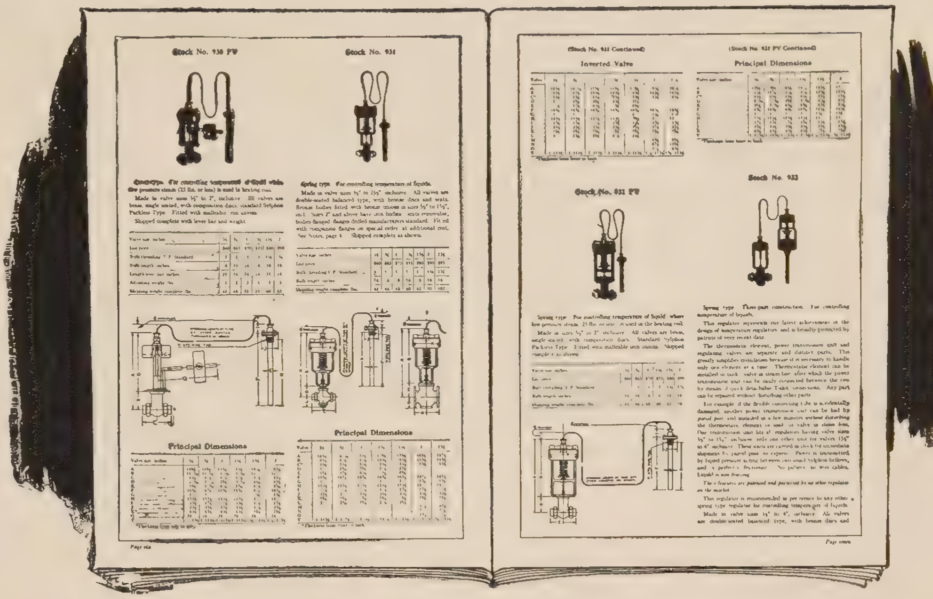
HOLLOW TILE—See Tile, Hollow

HOSPITAL EQUIPMENT

Betz Company, Frank S., Hammond, Ind. 30 E. Randolph St., Chicago, Ill.

Hospital Book. 7½ x 10½ in. 212 pp. Illustrated profusely. Lists and describes with prices and illustrations a complete line of steel hospital furniture.





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THIS book is replete with all the data every specification writer needs on Temperature Regulator problems. It gives detailed drawings of the Instruments, with plainly marked dimensions; shows complete and cut-open view of the instruments and many drawings showing typical installations of Sylphon Temperature Regulators on hot water supply tanks in Hotels, Apartment Houses, Hospitals, Clubs, etc.

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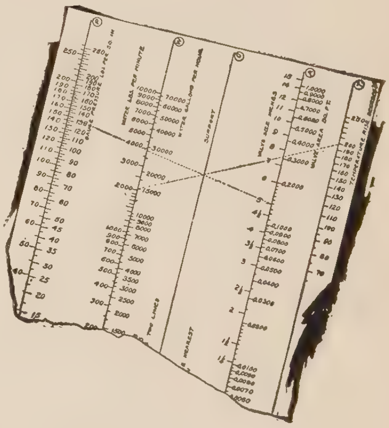
The book is Bulletin FTR-103. To whom shall we send it?



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120 Prince Street, Montreal, Canada

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 86*

HOSPITAL EQUIPMENT—Continued

The International Nickel Company, 67 Wall St., New York, N. Y.
Hospital Applications of Monel Metal. Booklet. 8½ x 11½ in. 16 pp. Illustrated. Gives types of equipment in which Monel Metal is used, reasons for its adoption, with sources of such equipment.

The Kny-Scheerer Corporation of America, 119 Seventh Ave., New York.
Hospital Equipment, 16th Edition. 7¼ x 10½ in. 232 pp. Illustrated. Complete description of Hospital and Surgical Furniture, Hospital Appliances including Operating Tables, Cabinets, Sterilizers for Water, Dressing and Instruments, also Hydrotherapeutic Apparatus.
Surgical Sundries. P/2 Edition. Booklet. 7⅜ x 10½ in. 48 pp. Illustrated. A complete line of glassware, enamelware, rubber goods, restraint apparatus, instrument sterilizers, sputum cups, wheel chairs and sick room comforts.
Electro-Medical. 25th Edition. Booklet. 7¼ x 10½ in. 160 pp. Illustrated. A complete line of Albee Bone Sets, Apparatus for AC and DC, Cystocopes, Heat Magnets, Vibrators, Compressors, Electric Light Baths, High Frequency Apparatus and X-Ray Apparatus and Accessories.

INCINERATORS

The Kerner Incinerator Company, 1029 Chestnut St., Milwaukee, Wis.
The Kernerator. Booklet. 5½ x 9¼ in. 40 pp. Illustrated. Describes principle and design of the Kernerator, guarantee and service, also gives illustrations of buildings where it has been installed and testimonials.
Sanitary Elimination of Household Waste. Booklet. 4 x 9 in. 16 pp. Illustrated. Shows process, installations and advantages of the Kernerator.
Sanitary Disposal of Waste in Hospitals. Booklet. 4 x 9 in. 12 pp. Illustrated. Shows how this necessary part of hospital service can be taken care of by the Kernerator.

INSULATION

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.
Specifications and Working Details. Booklet. 7¾ x 10½ in. Illustrated. Contains plainly written instructions for the use of stucco, stucco base, plaster base and insulation base.

Philip Carey Co., The, Cincinnati, Ohio.
Carey Asbestos and Magnesia Products. Catalog. 6 x 9 in. 72 pp. Illustrated.

Johns-Manville, Inc., Madison Ave., and 41st St., New York, N. Y.
Johns-Manville Service to Power Users. Catalog. 8½ x 11 in. 150 pp. Illustrated. Contains valuable data on all forms of insulations, packings, steam traps, high temperature cements, brake locks and linings, also general technical data.

United States Mineral Wool Co., 280 Madison Ave., New York.
The Uses of Mineral Wool in Architecture. Booklet. 5¼ x 6⅝ in. 24 pp. Illustrated. Describes properties of mineral wool as insulation against heat, frost, sound. Specifications and section drawing for use as a fireproofing. Rule for estimate and cost.

KITCHEN EQUIPMENT

Betz Company, Frank S., Hammond, Ind. 30 E. Randolph St., Chicago, Ill.
Kitchunit. Booklet. 7 x 10½ in. 4 pp. Illustrated. This illustrates and describes, including specifications, the Betzco All-Steel Kitchunits. A space-saving equipment that lowers building costs.

Colt's Patent Fire Arms Mfg. Company, Hartford, Conn.
AUTOSAN Dish and Silver Cleaning Machines. Booklets. 6 x 9 in. Describing rotary table type and conveyor type machines.

Wm. M. Crane Company, 16-20 West 32nd St., New York, N. Y.
VULCAN Gas Ranges and Appliances. Booklet. 5 x 8 in. 50 pp. Illustrated. Describes complete line, including VULCAN SMOOTH TOP Compact Cabinet Gas Ranges for kitchens in the home.
VULCAN Gas Equipment for Hotels, Hospitals, Restaurants, etc. Booklet. 5 x 8 in. 45 pp. Illustrated. Equipment for heavy-duty cooking requirements, with information of value to architects in planning kitchens.

The International Nickel Company, 67 Wall St., New York, N. Y.
Hotels, Restaurants and Cafeteria Applications of Monel Metal. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives types of equipment in which Monel Metal is used, with service data and sources of equipment.

Pick & Company, Albert, 208 W. Randolph St., Chicago, Ill.
School Cafeterias. Portfolio. 17 x 11 in. 44 pp. Illustrated. An exhaustive study of the problems of school feeding, with copious illustrations and blue prints. Very valuable to the architect.
Hotel, Apartment Building, Club and Institution Installations. Portfolio. 17 x 11 in. 100 pp. Shows, mostly by plates, how the Albert Pick Company equips hotels completely from top to bottom.
Equipment for Cafeterias, Lunch Rooms, Restaurants, and Dining Rooms Portfolio. 17 x 11 in. 86 pp. Illustrated. The last word in Cafeteria equipment to meet all requirements.

LABORATORY EQUIPMENT

Kewaunee Manufacturing Company, 141 Lincoln St., Kewaunee, Wis.
Kewaunee Book of Laboratory Furniture. Catalogue. 7 x 10 in. 408 pp. Illustrated. Science and Vocational Laboratory Furniture for schools, colleges, technical institutes, hospitals, etc., including floor plans, illustrations of buildings and equipped laboratories, illustrations of equipment engineering data for mechanical ventilation and illustrations of special plumbing fixtures for laboratory use.

LATH, METAL AND REINFORCING

The General Fireproofing Company, Youngstown, Ohio.
Herringbone Metal Lath Handbook. 8½ x 11 in. 32 pp. Illustrated. Standard specifications for Cement Stucco on Herringbone Rigid Metal Lath and interior plastering.

LATH, METAL AND REINFORCING—Continued

National Steel Fabric Company, Pittsburgh, Pa.
Folder. 8½ x 11 in. 6 pp. Illustrated. Describes National Stucco-Plaster Reinforcement, a base for exterior stucco and interior plastering, composition flooring, etc., with photographs and drawings.

Northwestern Expanded Metal Co., 934 Old Colony Building, Chicago, Ill.
Fireproof Construction Catalog, 6 x 9 in. 72 pp. Illustrated. Handbook of practical suggestions for architects and contractors. Describing Nemco Expanded Metal Lath.

LAUNDRY CHUTES

The Pfaudler Company, 217 Cutler Building, Rochester, N. Y.
Pfaudler Glass-Lined Steel Laundry Chutes. Booklet. 5⅛ x 7⅜ in. 16 pp. Illustrated. A beautifully printed brochure describing in detail with architects' specifications THE PFAUDLER GLASS LINED STEEL LAUNDRY CHUTES. Contains views of installations and list of representative ones.

LAVATORY ACCESSORIES

Cortes Ward Company, Inc., 245 West 55th St., New York, N. Y.
Literature to show how an appreciation service may be rendered to employees or patrons through the use of Lily Pads and Lily Vending Machines.

LEADERS AND GUTTERS

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.
Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

MAIL CHUTES

Cutler Mail Chute Company, Rochester, N. Y.
Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp. Illustrated.

MANTELS

Arthur Todhunter, 414 Madison Ave., New York, N. Y.
Mantels and Fireplace Equipment. Booklet. 8½ x 11 in. Illustrated. Separate sheet plates showing mantels installed and furnished, also andirons and grates grouped with suitable pieces, also lanterns, weather-vanes and hand-wrought hardware. All sizes and descriptions given on each plate.

MARBLE

The Georgia Marble Company, Tate, Ga. New York Office, 1328 Broadway.
Why Georgia Marble is Better. Booklet. 3⅜ x 6 in. Gives analysis, physical qualities, comparison of absorption with granites, opinions of authorities, etc.
Convincing Proof. Booklet. 3⅜ x 6 in. 8 pp. Classified list of buildings and memorials in which Georgia Marble has been used, with names of Architects and Sculptors.

Tompkins-Kiel Marble Company, 505 Fifth Ave., New York, N. Y.
Reproductions in natural colors of imported and domestic marbles and stone for interior and exterior uses.
Bulletins. 9¾ x 12¾ in. illustrating buildings of various types in which Tompkins-Kiel Marble Company's imported and domestic marbles and stone have been used.

METAL LATH—See Lath, Metal and Reinforcing

METALS

American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.
Reference Book. Pocket Ed. 2½ x 4½ in. 168 pp. Illustrated. Covers the complete line of Sheet and Tin Mill Products.
Apollo and Apollo-Keystone Galvanized Sheets. Catalog. 8½ x 11 in. 20 pp. Illustrated.
Research on the Corrosion Resistance of Copper Steel. Booklet. 8½ x 11 in. 24 pp. Illustrated. Technical information on results of atmospheric corrosion tests of various sheets under actual weather conditions.

Bridgeport Brass Company, Bridgeport, Conn.
Seven Centuries of Brass Making. Booklet. 10½ x 8 in. 78 pp. Illustrated in color. A brief history of the ancient art of Brass Making and its early (and even recent) method of production—contrasted with that of the Electric Furnace Process—a twentieth century achievement of the Bridgeport Brass Company.
Tested High-Speed Brass Rod. Booklet 10½ x 8 in. 16 pp. Illustrated. Short treatise on the manufacture of Brass Rod for use in Screw Machines, with particular reference to improvements originated by the Bridgeport Brass Company.

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.
Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

The International Nickel Company, 67 Wall St., New York, N. Y.
The Choice of a Metal. Booklet. 6¼ x 3¼ in. 16 pp. Illustrated. Monel Metal—its qualities, use and commercial forms, briefly described.

METAL TRIM—See Doors and Trim, Metal

MILLWORK—See also Wood

Curtis Companies Service Bureau, Clinton, Iowa.
Architectural Interior and Exterior Woodwork, Standardized. Book. 9 x 11½ in. 240 pp. Illustrated. This is an Architects' Edition of the complete catalog of Curtis Woodwork, as designed by Trowbridge & Ackerman. Contains many color plates.
Better Built Homes, Vols. XV-XVIII incl. Booklet. 9 x 12 in. 40 pp. Illustrated. Designs for houses of five to eight rooms, respectively, in several authentic types, by Trowbridge & Ackerman, architects for the Curtis Companies.
Curtis Details. Booklet. 19½ x 23½ in. 20 pp. Illustrated. Complete details of all items of Curtis woodwork, for the use of architects.

A Typical Group of Buildings Wired with Connecticut Wiring Devices

1. One of 1135 homes built at Malba, Flushing and Astoria, L. I., and financed by the Metropolitan Life Insurance Co.
   Elec. Contractor: Geo. Steinhardt, Bridgeport, Ct.
2. **Humboldt School,** Kansas City, Mo.
3. **North Court Apartments,** Buffalo, N. Y.
   Architect: Eli Goldstein, Buffalo, N. Y.
   Elec. Contractor: A. G. Groad, Buffalo, N. Y.
4. **Academy of Sisters of the Incarnate Word,** San Antonio, Texas.
   Architect: F. R. Gaenslen.
   Elec. Contractors: Graham & Collins.
5. **Montgomery Ward Building,** Oakland, Calif.
   Elec. Contractors: Spencer Elec. Co., Oakland, Calif.
6. **Beaumont Hotel,** Beaumont, Texas.
   Architects: Mann & Stearn, Little Rock, Ark.
   Elec. Contractors: Eugene Ashe Elec. Co., Fort Worth, Texas.
7. **Frost National Bank Building,** San Antonio, Texas.
   Architects: Sanguinet & Staats.
   Elec. Contractors: Martin Wright Elec. Co.
8. **Hotel Texas,** Fort Worth, Texas.
   Architects: Sanguinet & Staats, Fort Worth, Texas.
   Elec. Contractors: Eugene Ashe Elec. Co., Fort Worth, Texas.
9. **San Jacinto Life Insurance Bldg.,** Beaumont, Texas.
   Architects: Sanguinet & Staats & Gottlieb.
   Elec. Contractors: Eugene Ashe Elec. Co., Fort Worth, Texas.

THE CONNECTICUT ELECTRIC MANUFACTURING COMPANY
MAIN OFFICE and FACTORY: BRIDGEPORT, CONN.

New York **Chicago** **San Francisco**

CONNECTICUT "A-1" DEVICES

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 88*

MILLWORK—Continued

Roddis Lumber & Veneer Company, Marshfield, Wis.

Roddis Doorman Booklet. 10¼ x 7¼ in. 12 pp. Illustrated. Describes and illustrates the use of Roddis Doors for residences, clubs, hotels, etc.

Hartmann-Sanders Company, 2155 Elston Avenue, Chicago, Ill.

Column Catalog. 7½ x 10 in. 48 pp. Illustrated. Contains prices on columns 6 to 36 in. Diameter various designs and illustrations of Columns and installations.

The Pergola Catalog. 7½ x 10 in. 64 pp. Illustrated. Contains illustrations of Pergola lattices. Garden Furniture in Wood and Cement. Garden accessories.

MORTAR COLORS

Clinton Metallic Paint Co., Clinton, N. Y.

Clinton Mortar Colors. Folder. 8½ x 11 in. 4 pages. Illustrated in color, gives full information concerning Clinton Mortar Colors with specific instructions for using them.

Color Card. 6½ x 3¼ in. Illustrates in color the ten shades of which Clinton Mortar Colors are manufactured.

OFFICE SUPPLIES

Chas. M. Higgins & Co., 271 Ninth Street, Brooklyn, N. Y.

Descriptive Catalog. 3½ x 5½ in. 27 pages. Illustrated. Contains description and prices of Higgins Inks and Adhesives. Color Card illustrating various colors of the drawing inks supplied separate, size 3½ x 6¼.

ORGANS

Estey Organ Company, Brattleboro, Vt.

Pipe Organs. Complete specifications and full information furnished to the architect for pipe organ to be installed in any given residence upon receipt of plans and other particulars.

PAINTS, STAINS, VARNISHES AND WOOD FINISHES

Acme White Lead & Color Works, Detroit, Mich.

Booklet. 9 x 12 inches, 44 pp. Specifications for paint, enamel, varnish and dampproofing material.

Cabot, Inc., Samuel, Boston, Mass.

Cabot's Creosote Stains, Booklet. 4 x 8½ in. 16 pp. Illustrated.

Eagle-Picher Lead Company, The, 208 S. La Salle St., Chicago, Ill.

Specifications for Painting Structural Steel and Iron. Booklet. 9½ x 11½ in. 7 pp. Not Illustrated. A set of specifications which embody the latest developments in this field as revealed by the research department of The Eagle-Picher Lead Company in the light of their eighty-one years' experience, enclosed in folder 13 x 2, ready for filing.

Fighting Rust with Sublimed Blue Lead. Book. 80 pp. Illustrated. 5½ x 8½ in. An excellent addition to one's technical library, well bound in a stiff cover. An assemblage of scientific facts concerning the theory of corrosion of iron and steel and the prevention of rust with Sublimed Blue Lead.

Chemical Analysis of Lead and Its Compounds. Book. 5½ x 8½ in. 160 pp. Illustrated. A treatise on the latest methods of analysis adopted by the leading laboratories which must examine lead and its compounds from an analytical standpoint.

Lead Tree Chart. 9 x 11½ in. 1 p. Framed Chart. Not illustrated. A chart reflecting all the uses of lead, from crude ore to the finished products.

Zinc Tree Chart. 9 x 11½ in. 1 p. Framed Chart. Not Illustrated. A chart reflecting all the uses of zinc—from the ore to the finished product.

Rust-proofing Pamphlet. 3 x 5 in. 16 pp. Illustrated. Of interest to anyone connected in any way with steel construction.

The Glidden Company, Cleveland, Ohio.

"More Daylight." 8 x 10½ in. 20 pp. Portraying by illustrations and text the need and methods of modern mill painting.

The Hockaday Company, 1823 Carroll Ave., Chicago, Ill.

Paint Mileage. Book. 8 x 10½ in. 56 pp. Illustrated. A reference book on interior painting. Describes use of paint over all sorts of surfaces, with illustrations of buildings where Hockaday has been specified. Hockaday service explained.

Solving Your Paint Problems. Booklet. 8½ x 11 in. 44 pp. Illustrated. Describes use of Hockaday Paint in Industrial Buildings, particularly in textile mills. Details of Hockaday service and specifications.

Martin Varnish Co., 2500 Quarry St., Chicago, Ill.

Architectural Specifications. Booklet. 8½ x 11 in. 20 pp. Illustrated. Complete guide for Architects in specifying Martin Varnish Products.

Your Floors. Booklet. 5 x 7 in. 20 pp. Illustrated. Explains fully how to finish all kinds of floors and woodwork with Martin's Pure Varnish.

National Lead Company, 111 Broadway, New York, N. Y.

Handy Book on Painting. Book. 5½ x 3¼ in. 100 pp. Gives directions and formulas for painting various surfaces of wood, plaster, metal, etc., both interior and exterior.

Red Lead in Paste Form. Booklet. 6¼ x 3½ in. 16 pp. Illustrated. Directions and formulas for painting metals.

Came Lead. Booklet. 8¾ x 6 in. 12 pp. Illustrated. Describes various styles of lead cames.

Cinch Anchoring Specialties. Booklet. 6 x 3½ in. 20 pp. Illustrated. Describes complete line of expansion bolts.

The Ripolin Company, Cleveland, Ohio.

Ripolin Specifications. Book. 8 x 10¼ in. 12 pp. Complete specifications and general instructions for the application of Ripolin, the original Holland enamel paint. Also directions for proper finishing of wood, metal, plaster, concrete, brick and other surfaces.

"Why Ripolin Has an International Reputation." 8 x 10¾ in. 24 pp. Designed for the architect's files to illustrate the many varied uses of Ripolin Enamel Paint in all parts of the world. Profusely illustrated.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.

Preservative Coatings. Booklet. 6 x 9 in. 15 pp. Illustrated. Presents in a concise manner the properties and uses of the Ruberoid Company's various paint preparations.

PAINTS, STAINS, VARNISHES & WOOD FINISHES—Continued

Sherwin-Williams Company, 601 Canal Rd., Cleveland, Ohio.

Painting Concrete and Stucco Surfaces. Bulletin No. 1. 8½ x 11 in. 8 pp. Illustrated. A complete treatise with complete specifications on the subject of Painting of Concrete and Stucco Surfaces. Color chips of paint shown in bulletin.

Enamel Finish for Interior and Exterior Surfaces. Bulletin No. 2. 8½ x 11 in. 12 pp. Illustrated. Thorough discussion including complete specifications tor securing the most satisfactory enamel finish on interior and exterior walls and trim.

Painting and Decorating of Interior Walls. Bulletin No. 3. 8½ x 11 in. 20 pp. Illustrated. A wonderful reference book on Flat Wall Finish including texture effects which are taking the country by storm. Every architect should have one on file.

Protective Paints for Metal Surfaces. Bulletin No. 4. 8½ x 11 in. 12 pp. Illustrated. A highly technical subject treated in a simple, understandable manner.

Sonneborn Sons, Inc., L., Dept. 4, 116 Fifth Avenue, New York.

Paint Specifications. Booklet. 8½ x 10¾ in. 4 pp.

PANELING—See Millwork

PARTITIONS

Improved Office Partition Company, 25 Grand St., Elmhurst, L. I.

Telesco Partition, Catalog. 8¼ x 11 in. 14 pp. Illustrated. Shows typical offices laid out with Telesco partitions, cuts of finished partition units in various woods. Gives specifications and cuts of buildings using Telesco.

Detailed Instructions for erecting Telesco Partitions. Booklet. 24 pp. 8½ x 11 in. Illustrated. Complete instructions, with cuts and drawings, showing how easily Telesco Partition can be erected.

Richards-Wilcox Mfg. Co., Aurora, Ill.

Partitions. Booklet. 7 x 10 in. 32 pp. Illustrated. Describes complete line of track and hangers for all styles of sliding, parallel, accordion and flush door partitions.

The J. G. Wilson Corporation, 11 East 36th St., New York, N. Y.

Rolling Partitions, Hygienic and Disappearing Door Wardrobes. Booklet. 6 x 9 in. 32 pp. Illustrated. Describes rolling partitions, particularly in churches and schools, and wardrobes as installed in schools and public institutions.

Circle "A" Products Corporation, Champaign, Ill.

Catalog. 11⅛ x 8⅝ in. 28 pp. Illustrated. Gives information data and illustration of Circle "A" Sectional Office Partitions.

PIPE

American Brass Company, Waterbury, Conn.

Bulletin B-1, "Brass Pipe for Water Service." 8½ x 11 in. 28 pp. Illustrated. Gives schedule of weights and sizes (I.P.S.) of seamless brass and copper pipe, shows typical installations of brass pipe, and gives general discussion of the corrosive effect of water on iron, steel and brass pipe.

Bridgeport Brass Company, Bridgeport, Conn.

Bulletin No. 15. Brass Pipe and Piping. Booklet. 8 x 10½ in. 48 pp. Illustrated. When and how to use Brass Pipe. Brass pipe compared with iron and steel pipe for hot water service. Corrosion. Description of manufacture of Bridgeport Plumrite Brass Pipe.

A. M. Byers Company, 235 Water St., Pittsburgh, Pa.

Bulletin 26-A. "What is Wrought Iron?" 8 x 10¾ in. 40 pp. Illustrated. Descriptions of materials and processes employed in manufacturing Byers genuine wrought iron pipe. Factors influencing corrosion. Gives table of pipe sizes, weights, dimensions, tests, etc., and tabulated records of the life of iron and steel pipe in various kinds of service.

Bulletin 30. An Investigation of Pipe Corrosion in Hot Water Service. 8 x 10¾ in. 20 pp. Illustrated. Shows service records of iron, steel and brass pipe used for hot and cold water supply lines in 129 Pittsburgh Apartment Buildings.

Bulletin 32. Corrosion of Wright Iron, Cast Iron and Steel Pipe in House Drainage Systems. 8 x 10¾ in. 32 pp. Illustrated. Data obtained through investigations conducted in New York and Chicago by Dr. Wm. P. Gerhardt, C. E., and Thomas J. Claffy, Asst. Chief San. Inspector city of Chicago.

Bulletin 38. The installation Cost of Pipe. 32 pp. 8 x 10¾ in. Illustrated. Cost analysis of 20 different pipe installations, in power and industrial plants, office buildings, hotels, residences, etc.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.

Catalog "A," 4 x 6½ in. 700 pp. Illustrated. Shows a full line of steam, gas and water works supplies.

National Tube Co., Frick Building, Pittsburgh, Pa.

"National" Bulletin No. 2. Corrosion of Hot Water Pipe. (8½ x 11 in. 24 pp.) Illustrated. In this bulletin is summed up the most important research dealing with hot water systems. The text matter consists of seven investigations by authorities on this subject.

"National" Bulletin No. 3. The Protection of Pipe Against Internal Corrosion (8½ x 11 in. 20 pp.) Illustrated. Discusses various causes of corrosion and details are given of the deactivating and deaerating systems for eliminating or retarding corrosion in hot water supply lines.

"National" Bulletin No. 25. "National" Pipe in Large Buildings. 8½ x 11 in. 88 pp. This bulletin contains 254 illustrations of prominent buildings of all types, containing "National" Pipe and considerable engineering data of value to architects, engineers, etc.

Modern Welded Pipe. Book of 88 pages (8½ x 11 in.), profusely illustrated with halftone and line engravings of the important operations in the manufacture of pipe.

Reading Iron Company, Reading, Pa.

Reading Genuine Wrought Iron Pipe in the Making and in Service. Bulletin No. 1. 8½ x 11 in. 32 pp. Illustrated. History of the Reading Iron Company. Origin of wrought iron—description of each process of manufacture of both buttweld and lapweld pipe—Reading Pipe in various fields.

Book of Standards. Booklet. 5 x 7 in. 48 pp. Illustrated. Complete tables showing dimensions, tests and list prices on each of the 552 different kinds of Reading Tubular goods. Two simple tests for distinguishing genuine wrought iron pipe.

The American Consumer gets more square miles of painted surface per year out of HOCKADAY PAINTS-dollar for dollar-than with any other paint

"Save the surface and you save all" - Paint & Varnish

The other day we heard an architect express his belief that there was very little in paint advertising that he could hold fast to. There were a lot of claims that never could be proved and too many makers saying the same things, generally.

Right here Hockaday wants the world to know that any or all claims made by and for Hockaday can be proved, backed and substantiated in a manner which cannot possibly leave the vestige of a doubt in the mind of any fair-minded man as to just exactly what Hockaday can and will do. Hockaday is not in the market just to sell paint—but to make it STAY SOLD. To keep it sold the paint MUST DELIVER the goods. In other words—it must do exactly what we say it will do. The day Hockaday must resort to any other plan to sell paint—that day will be the logical moment for us to go out of business.

We make the statement at the top of this page advisedly. The proofs are yours for the asking—and we invite you to ask us.

Let us send you our big book, "Paint Mileage," full of paint facts. Free if you write on your letterhead.

THE HOCKADAY COMPANY
1823-1829 Carroll Avenue, CHICAGO

HOCKADAY

THE WASHABLE PAINT FOR ALL INTERIORS

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 90*

PIPE—Continued

The Painted Molecule. Booklet. 4 x 9 in. 8 pp. Illustrated. A brief, non-technical description of the reasons for the longer life of Reading Iron Pipe, with instances of actual service.

The Ultimate Cost, Booklet. 5¼ x 7¼ in. 24 pp. Illustrated in two colors. A comparison in actual figures of the initial cost and the ultimate cost of plumbing and heating systems in several kinds of homes.

Grinnell Company, 285 West Exchange Street, Providence, R. I.
Grinnell Bulletin Booklet. 10½ x 7¾ in. Illustrated. Issued monthly. Describes and illustrates the different Grinnell products.

PLUMBING EQUIPMENT

American Brass Company, Waterbury, Conn.
Benedict Nickel. Illustrated pamphlet descriptive of Benedict Nickel White Metal for high-grade plumbing fixtures.

Bridgeport Brass Company, Bridgeport, Conn.
Plumbing Supplies. Booklet. 10½ x 8 in. 20 pp. Illustrated. Describes a few of the different plumbing supplies manufactured by the Bridgeport Brass Company.

Brunswick-Balke-Collender Co., 623 S. Wabash Avenue, Chicago, Ill.
Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 4 pp. Illustrated.
Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 8 pp. Illustrated.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.
Catalog "M." 9¼ x 12 in. 184 pp. Illustrated. Shows complete line of plumbing fixtures for Schools, Railroads and Industrial Plants.

Crane Company, 836 S. Michigan Avenue, Chicago, Ill.
Crane Products in World Wide Use. Catalog. 5 x 9½ in. 24 pp. Illustrated.

Plumbing Suggestions for Home Builders. Catalog. 3 x 6 in. 80 pp. Illustrated.

Plumbing Suggestions for Industrial Plants. Catalog. 4 x 6½ in. 43 pp. Illustrated.

Douglas Co., The John, Cincinnati, Ohio.
Catalog "C." 10½ x 8 in. 200 pages illustrated. Illustrates and describes the Douglas complete line of China Sanitary plumbing fixture.

Booklet. "Douglas suggests for your home." 6 x 3½ in. 39 pp. Illustrated.

Eljer Company, 15 E. Van Buren St., Chicago, Ill.
The Standardized Sixteen. Booklet. 3¾ x 6¾ in. 16 pp. Illustrated. Describes fully the complete Eljer line of standardized plumbing equipment, with diagrams, weights, measurements and copious illustrations.

Standardized Sixteen. Circular. 3¾ x 6¾ in. 18 pp. Illustrated.

Complete catalog. 3¾ x 6¾ in. 104 pp. Illustrated.

Kohler Co., Kohler, Wis.
Catalog F. 7½ x 10⅝ in. 216 pp. Illustrates and describes the complete line of Kohler trade-marked plumbing ware.

Roughing-In Measurement Binder. 5 x 8 in., containing loose leaf sheets on all staple fixtures.

Maddock's Sons Company, Thomas, Trenton, N. J.
Catalog K. 10⅞ x 7⅞ in. 242 pp. Illustrated. Complete data on vitreous china plumbing fixtures with brief history of Sanitary Pottery.

Speakman Company, Wilmington, Del.
Speakman Showers and Fixtures. Catalog. 4½ x 7½ in. 250 pp. Illustrated. Catalog of Modern Showers and Brass Plumbing Fixtures, with drawings showing layouts, measurements, etc.

Toned Up in Ten Minutes. Booklet. 7½ x 10½ in. 16 pp. Illustrated. Modern Showers and Washups for Industrial Plants, showing the sanitary method of washing in running water.

Wolff Manufacturing Company, 255 No. Hoyne Ave., Chicago, Ill.
Plumbing Suggestions. Catalog. 3¼ x 6 in. 50 pp. Illustrated. Illustrating, describing and pricing Wolff Quality Plumbing Fixtures for residential installation.

PUMPS

Goulds Mfg. Co., The, Seneca Falls, N. Y.
Set of Twenty Bulletins, 7½ x 10⅝ in. 12 to 32 pp. each. Illustrated. Covers complete line of power and centrifugal pumps for all services.

Kewanee Private Utilities Co. 442 Franklin St., Kewanee, Ill.
Bulletin E. 7¾ x 10¼ in. 32 pp. Illustrated. Catalog. Complete descriptions, with all necessary data, on Standard Service Pumps, Indian Brand Pneumatic Tanks, and Complete Water Systems, as installed by Kewanee Private Utilities Co.

RAMPS

Ramp Buildings Corporation, 115 Broad St., New York, N. Y.
The d'Humy Motoramp System of Building Design. Booklet. 8½ x 11 in. 20 pp. Illustrated. Describes the d'Humy system of ramp construction for garages, service buildings, factories, warehouses, etc., where it is desirable to drive motor vehicles or industrial tractors under their own power from floor to floor.

Storage Efficiency of Multi-Floor Garages. Leaflet. 8½ x 11 in. 4 pp. Illustrated. A brief discussion of comparative storage efficiencies of elevator garages, ordinary ramp garages, and d'Humy Motoramp garages.

Visibility. Pamphlet. 8½ x 11 in. 2 pp. Illustrated. Discussion of visibility feature of d'Humy Motoramp System with reference to illustration of one particular installation.

Series of Informal Bulletins on Garage Design. Sent upon request.

REINFORCED CONCRETE—See also Construction, Concrete

The General Fireproofing Company, Youngstown, Ohio.
Self-Sentering Handbook. 8½ x 11 in. 36 pp. Illustrated. Methods and specifications on reinforced concrete floors, roofs and floors with a combined form and reinforced material.

REINFORCED CONCRETE—Continued

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.
Shearing Stresses in Reinforced Concrete Beams. Booklet. 8½ x 11 in. 12 pp

North Western Expanded Metal Company, Chicago, Ill.
"Designing Data" Book. 6 x 9 in. 96 pp. Illustrated. Covers the use of Econo Expanded Metal for various types of reinforced concrete construction.

ROOFING

American Brass Company, Waterbury, Conn.
Service Sheets 43-1 and 43-2, standard specifications and methods of laying copper roofings, flashings, hips, valleys, decks, gutters and leaders.

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Better Buildings. Catalog. 8½ x 11 in. 32 pp. Describes Corrugated and Formed Sheet Steel Roofing and Siding Products, black, painted and galvanized, with directions for application of various patterns of Sheet Steel Roofing in various types of construction.

Copper—Its Effect Upon Steel for Roofing Tin. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes the merits of high grade roofing tin plates and the advantages of the copper-steel alloy.

"The Testimony of a Decade." Booklet. 8½ x 11 in. 16 pp., with Graphic Chart and illustration showing losses to various Iron and Steel Sheets for roofing, from atmospheric corrosion.

Philip Carey Co., Lockland, Cincinnati, Ohio.
Architects' Specifications for Carey Built-up Roofing. Booklet. 8 x 10¾ in. 24 pp. Illustrated. Complete data to aid in specifying the different types of built-up roofing to suit the kind of roof construction to be covered.

Carey Built-up Roofing for Modern School Buildings. Booklet. 8 x 10¾ in. 32 pp. Illustrated. A study of school buildings of a number of different kinds and the roofing materials adapted for each.

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.
Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

Federal Cement Tile Co., 110 So. Dearborn St., Chicago, Ill.
The Indestructible Roof. Booklet. 10 x 13 in. 32 pp. Illustrated. Illustrates and describes the installation of permanent concrete interlocking tile, tile with glass insets, flat tile and channel tile, on all types of industrial plants and other buildings with flat and pitched surfaces.

Standards. Booklet. 8½ x 11 in. 40 pp. Illustrated with full-page drawings. Gives full details of all forms of roof construction of steel structure, ridge and gutter construction, purlin arrangement, spacing, etc., for standard roofs.

Johns-Manville, Inc., Madison Ave. & 41st St., New York, N. Y.
Johns-Manville Building Materials. Book. 8½ x 11 in. 100 pp. Illustrated. A comprehensive catalog of various types of roofing for all forms of construction. Details of wall, floor and ceiling insulation; asbestos wood for fireproof construction; waterproofing, etc.

Johns-Manville Asbestos Shingles. Booklet. 8½ x 11 in. 24 pp. Illustrated. This booklet is profusely illustrated in colors, showing some very artistic blends of asbestos shingles with various types of architecture. Contains many valuable suggestions for the architect.

Ludowici-Celadon Company, 104 So. Michigan Ave., Chicago, Ill.
"Ancient" Tapered Mission Tiles. Leaflet. 8½ x 11 in. 4 pp. Illustrated. For architects who desire something out of the ordinary, this leaflet has been prepared. Describes briefly our "Ancient" Tapered Mission Tiles, hand-made, with full corners and designed to be applied with irregular exposures.

Richardson Company, The, Lockland, Ohio.
Roofs of Distinction Booklet. 5 x 6¾ in. 22 pp. Illustrated in 4 colors and black and white.
Gives process of roofing manufacture. Has color charts showing four shingles of different colors blended in same roof. Lists and describes Richardson Products.

Roofing on the Farm Booklet. 5 x 6¾ in. 22 pp. Illustrated in 4 colors and black and white.
A solution to farm roofing problems.

Viskalt Roof Specifications Booklet. 7 x 12 in. 10 pp. Illustrated. Specifications for applying Viskalt Membrane built on roofs.

A Specific Way to Outwit the Weather Booklet. 10 x 12 in. 4 pp. Illustrated.
Treatise on recoating old roofs.

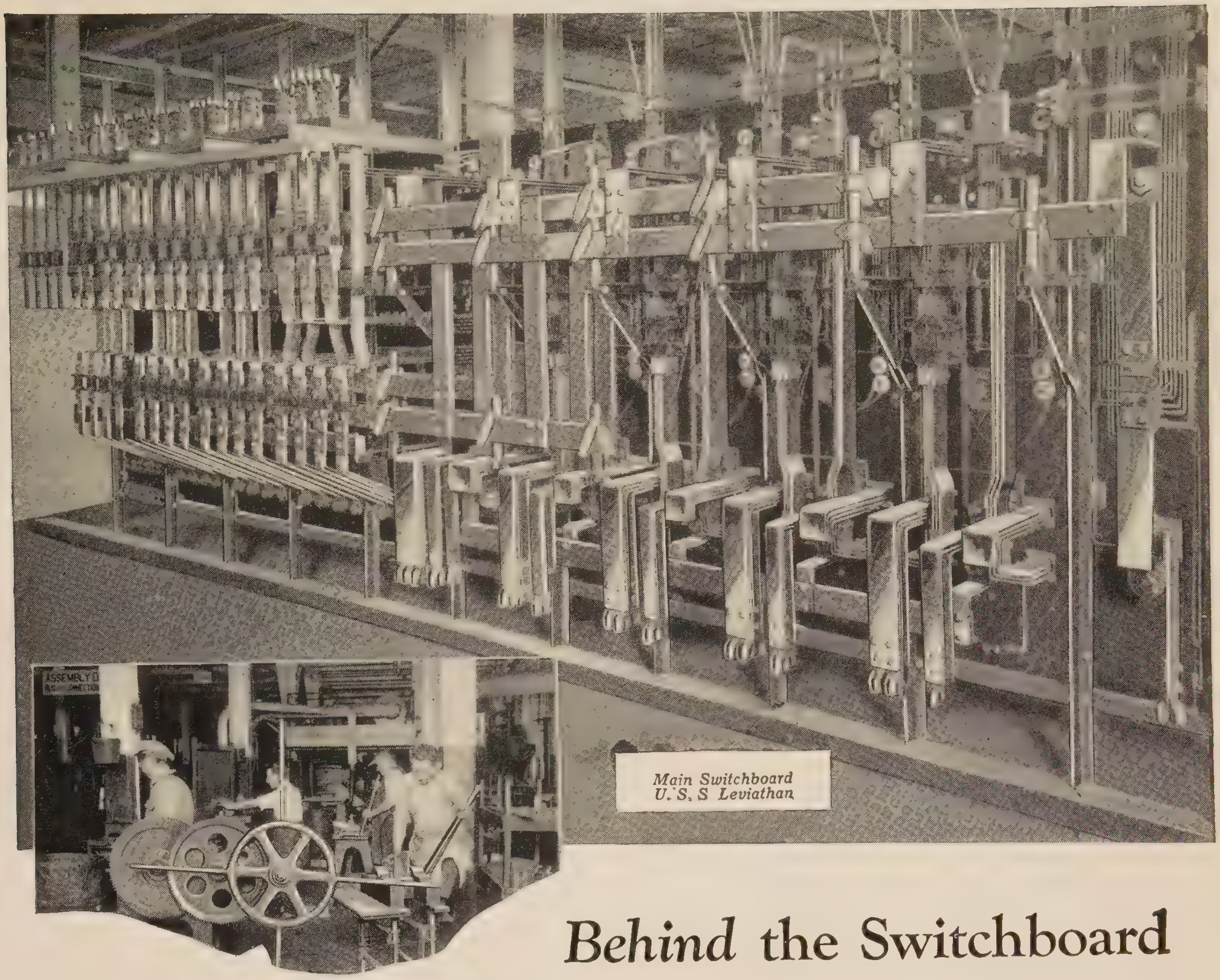
Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.
Instructions for Laying Built-up Roofs. Booklet. 8½ x 11. in. Illustrated.

Rubberoid Strip-Shingle. Booklet. 3½ x 6¼ in. 16 pp. Illustrated in color.

United Alloy Steel Corporation, Canton, Ohio
Better Sheet Metal. 8½ x 11 in. 128 pages and cover. Illustrated. Shows the many uses of Toncan Metal with many pictures of buildings, names of architects, etc., also tables of weights and other useful specification data.

Weatherbest Stained Shingle Co., Inc., North Tonawanda, N. Y.
The Construction of Weatherbest Thatch Roofs. Booklet. 8 x 11 in. 16 pp. Illustrated. A well written, carefully prepared book giving in detail the proper construction for securing the Thatch Effect roof by the use of WEATHERBEST Stained Shingles. Contains full-page reproductions of WEATHERBEST homes and drawings showing detail of roof construction.

Various Pamphlets. Illustrated. Each pamphlet exemplifies some specific quality of WEATHERBEST Stained Shingles used for roofs and sidewalls.



Main Switchboard
U. S. S Leviathan

Special machinery for bending connection bars

Behind the Switchboard

It is one thing to look at the front of a switchboard, especially after installation, but it is quite another matter, and an important one, to look at the back of the switchboard just after assembly at the maker's works.

Specifications for bus copper are deficient when expressing only the conductivity and carrying capacity of the bus copper. They should be supplemented to provide for the minimum number of bolted or sweated joints. This minimum is reached in G-E manufacture by the use of machinery that permits bus copper to be shaped with twists, offsets, edgewise bands, or right, acute and obtuse angle flat bends.

All connection bars in G-E switchboards are symmetrically formed and supported to provide perfect alignment.

Terminal locations should be arranged for most economical use of copper.

Busbar supports are installed only at intersections of panels. Heavy busbar supports are fastened at both top and bottom.

The above provisions are a few of the many engineering and manufacturing refinements worked out after years of experience in making switchboards for buildings.

This advertisement is the fifth part of the story of the building of quality switchboards. Our ambition is to make this story of sufficient interest to merit a place in your file No. 31c2.

General Electric Company
Schenectady, N. Y.

54C-86

GENERAL ELECTRIC

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 92*

ROOFING MATERIALS

National Slate Association, 757 Drexel Bldg., Philadelphia, Pa.

"Slate; Consider its Uses." Booklet. 4 x 6½ in. 20 pages and cover. Illustrated. A review of the advantages of using slate for various purposes, chiefly for roofing where it renders invaluable service by reason of its indestructibility.

RUGS, IMPORTED

Kent-Costikyan Trading Company, Inc., 484 Fifth Ave., New York, N. Y.

Rugs. Catalogue. 9½ x 6½. 56 pp. Illustrated. Illustrates and describes an unusual collection of Oriental and Occidental rugs with stock list.

SASH CHAIN

American Chain Company, Inc., Bridgeport, Conn.

American Sash Chain. Booklet. 3½ x 6 in. 8 pp. Illustrated. Describes and illustrates American Sash Chain and Sash Fixtures.

Smith & Egge Mfg. Co., The, Bridgeport, Conn.

Chain Catalog. 6 x 8½ in. 24 pp. Illustrated. Covers complete line of chains, hardware and specialties.

SASH CORD

Samson Cordage Works, Boston, Mass.

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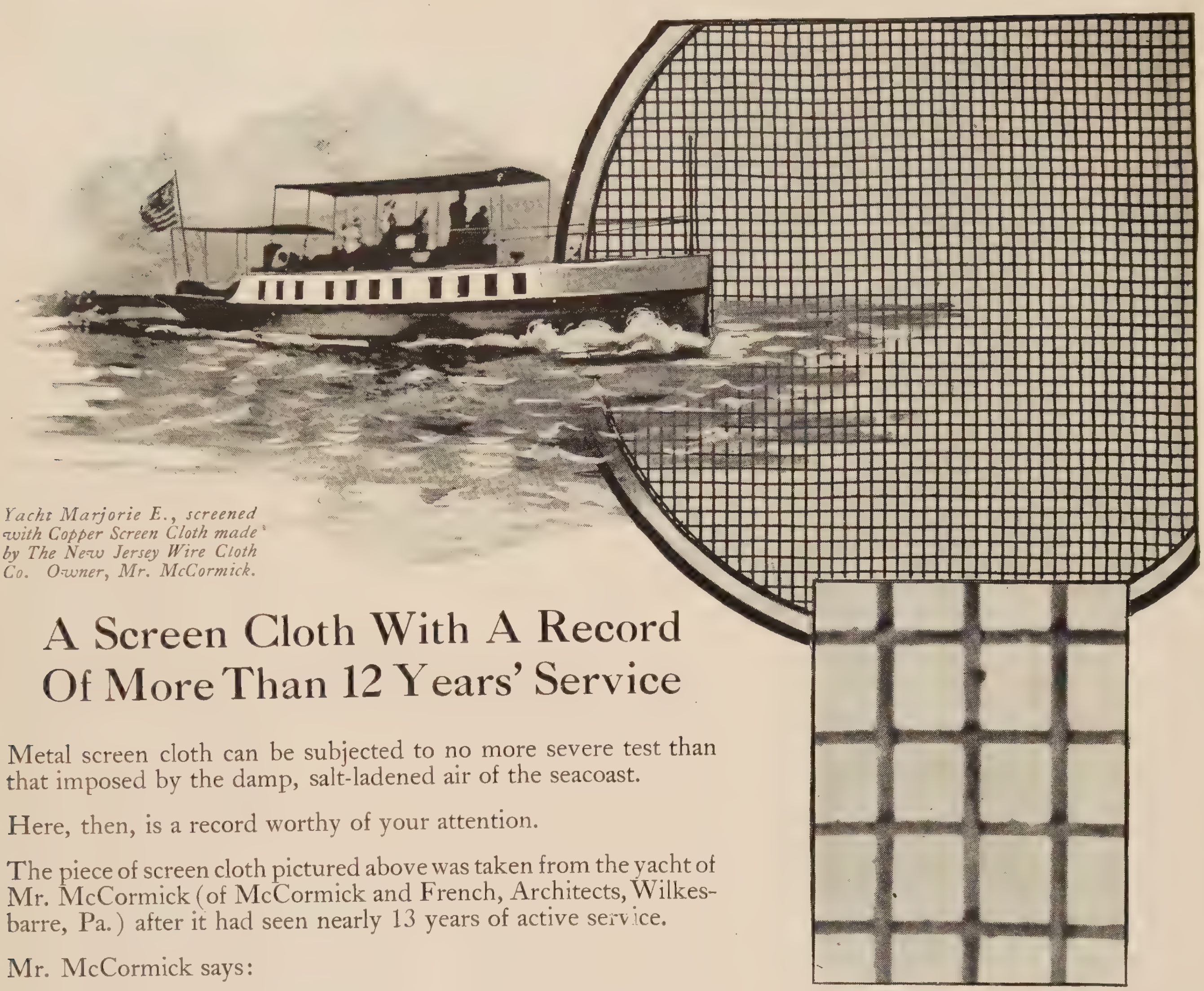

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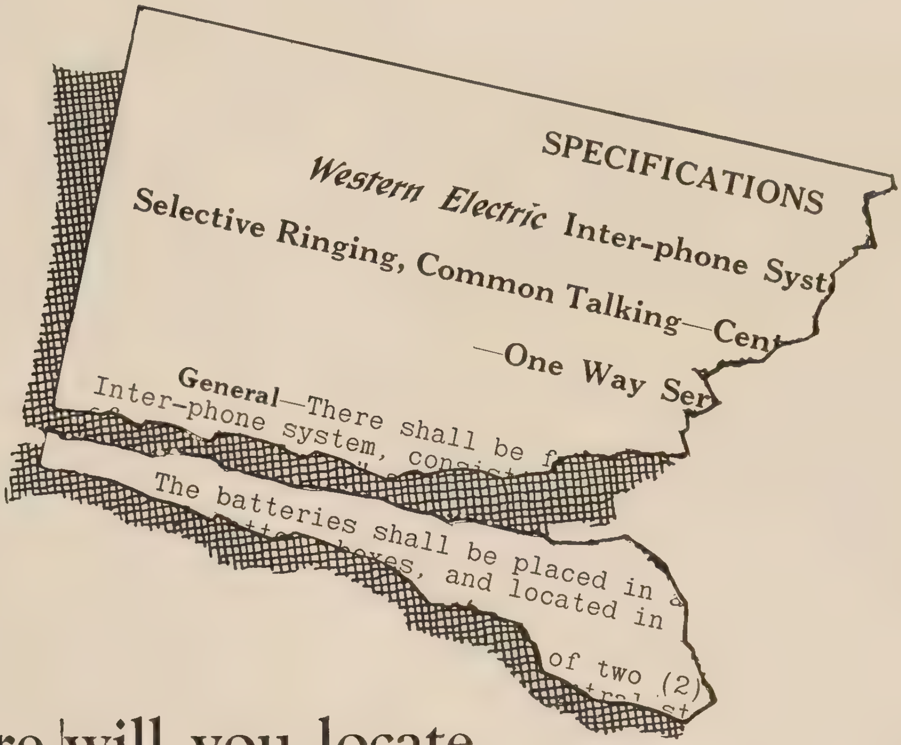

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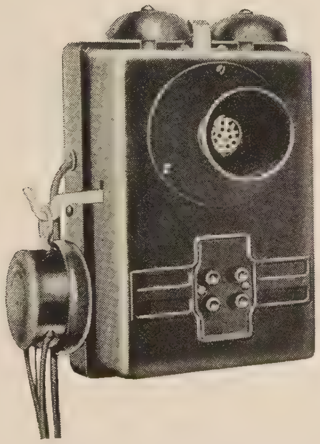

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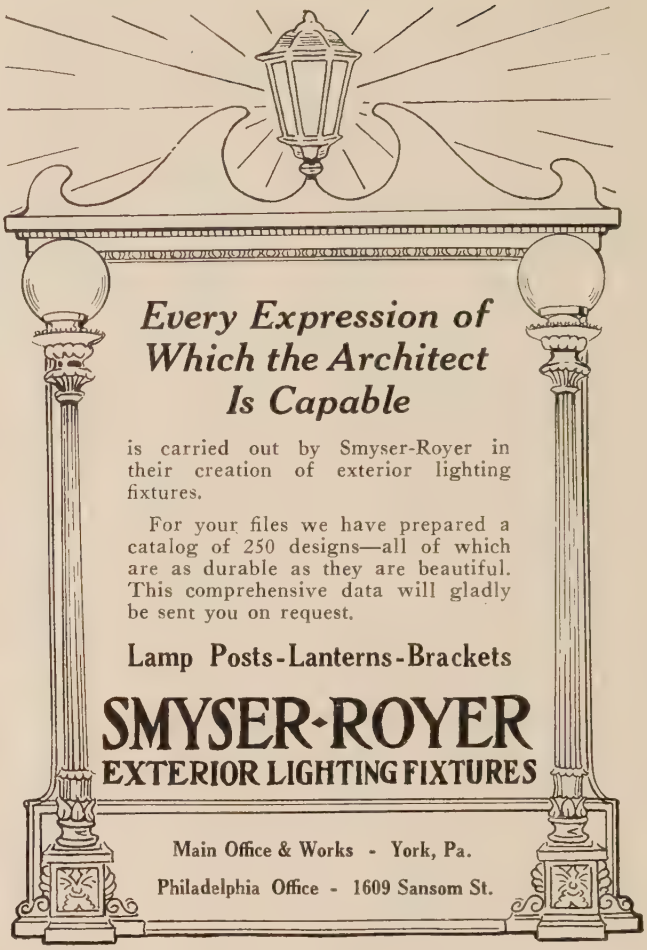

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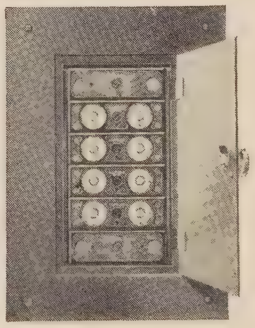

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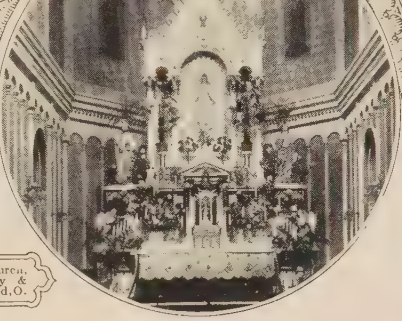

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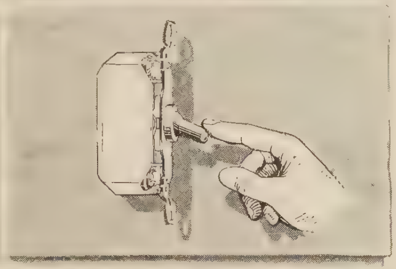

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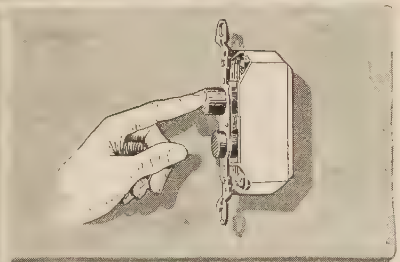

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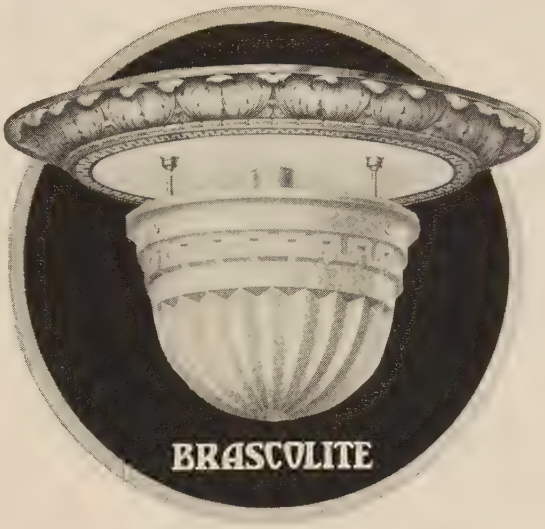

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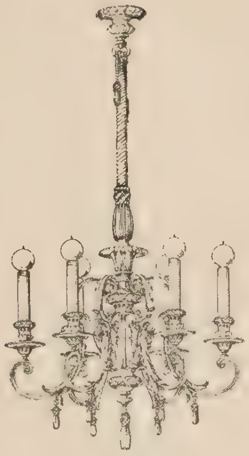

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Saving on Labor Cost and Waste

An advertisement based on the personal experience
of
★GLEN PIERCE, *Contractor,* **IONIA, MICHIGAN**
(As stated in an audited Gould Report)

LUMBER is put into construction piece by piece. Very often the carpenter finds it necessary to sort over the lumber, square the ends—re-work it with saw and plane to make it ready for construction.

That work takes time. Every hour saved is money saved. Saving one hour in ten means a 10 per cent saving in carpenter labor cost.

Mr. Glen Pierce, an experienced contractor of Ionia, Michigan, has found that Long-Bell trade-marked lumber comes on the job so nearly ready for construction that he makes a definite saving from its use.

"For over ten years I have used Long-Bell long leaf dimension in general contracting work," Mr. Pierce points out, "and have found that it effected savings in carpenter labor and waste as compared to ordinary grades of lumber. The use of this high grade lumber also prolongs the life of the building.

"Because Long-Bell lumber is thoroughly seasoned by either air or kiln drying, structures built with it do not depreciate nearly as rapidly as those built with ordinary lumber. This fact is not often recognized by the owner. The lasting quality of Long-Bell lumber is well illustrated in the large open-air pavilion which I built in the Ionia fairgrounds over eight years ago. This building has been constantly exposed to the weather, both winter and summer; it is practically as good today as when it was put up.

"There is a saving in carpenter's time with high grade lumber because a minimum of cutting and sorting is required. Carpenter's time is also noticeably saved with good flooring, which, being accurately machined and carefully seasoned, can be fitted together with a minimum of effort. Ordinary flooring requires considerable effort to drive the joints together and even then is likely to spread because not thoroughly seasoned.

"On an average, 10 per cent of the carpenter labor cost can be saved with Long-Bell lumber. Since a carpenter handles an average of five hundred feet per day at a saving of 75 cents (★), the saving in labor is $1.50 per thousand.

"The saving in waste is easily 7 per cent as compared to ordinary lumber. At an average cost of $45.00 per thousand feet, this amounts to $3.15 per thousand.

"The savings in carpenter labor and waste give a gross saving of $4.65 per thousand.

"I use Long-Bell lumber because is is a dependable, high grade product which effects important savings for my clients and me."

Retail lumber dealers will co-operate in providing Long-Bell lumber products.

LONG-BELL
KNOW THE LUMBER YOU BUY

★How Mr. Pierce Estimates His Savings

Mr. Pierce estimates that Long-Bell trade-marked lumber saves him in carpenter labor as follows:

Cost of carpenter labor on ordinary lumber, per M ft.	$15.00
Cost of carpenter labor on Long-Bell lumber, per M ft.	13.50
A saving of per M ft.	$ 1.50

His estimate of the saving in waste lumber:

Waste in ordinary lumber, 7% of $45.00 (an average price) per M ft.	$ 3.15
Waste in Long-Bell lumber per M ft.	0 00
A saving of per M ft.	$ 3.15

—a total saving of $4.65 per M feet.

★Send for the whole story
Long-Bell

LONG-BELL LUMBER IS TRADE-MARKED ON THE END OF THE PIECE.

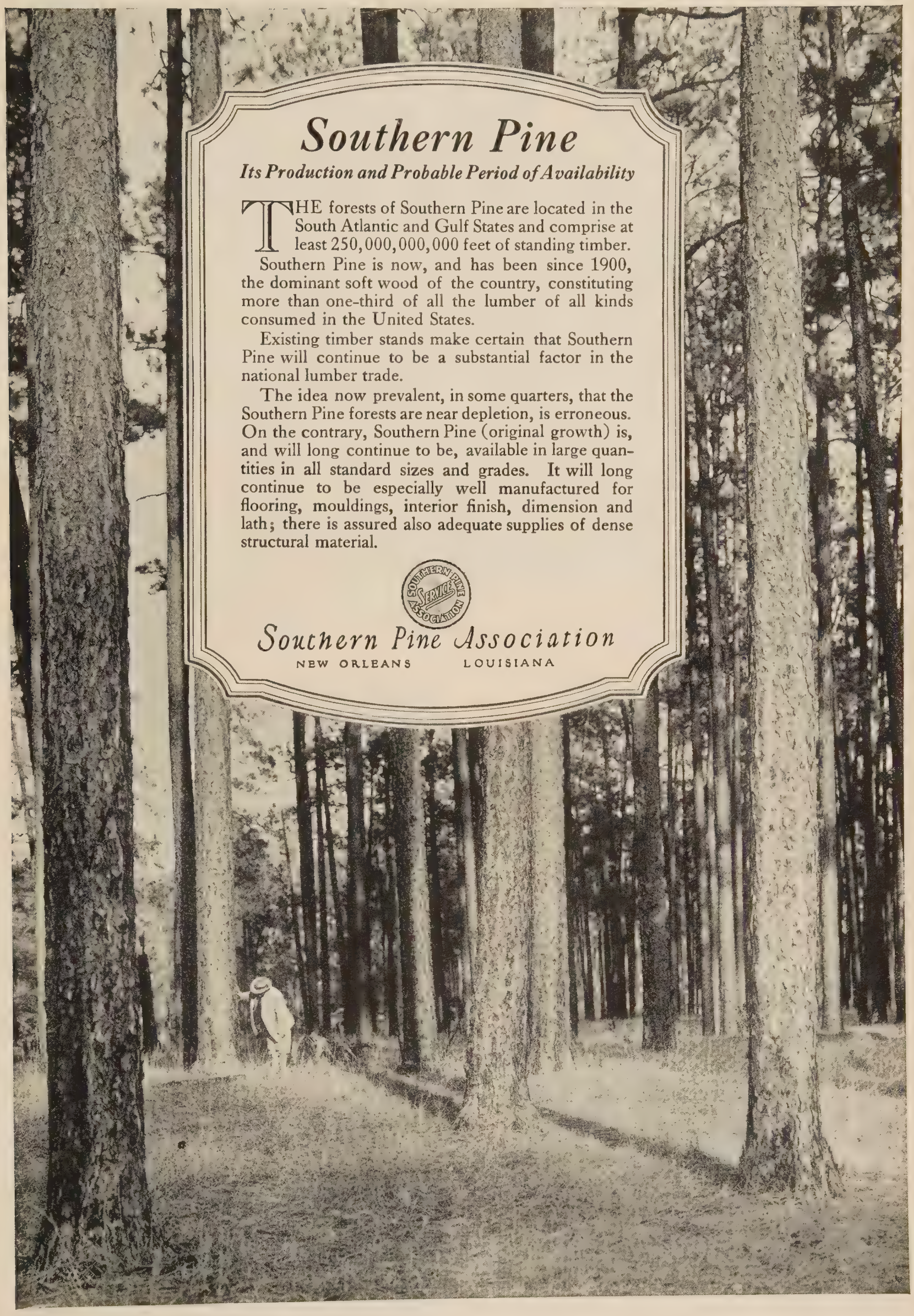
Read Mr. Pierce's entire statement:

*Name*____________________

*Address*____________________

*City*________________ *State*__________

THE LONG-BELL LUMBER COMPANY
Lumbermen Since 1875
609 R. A. LONG BLDG. KANSAS CITY, MO.



Southern Pine

Its Production and Probable Period of Availability

THE forests of Southern Pine are located in the South Atlantic and Gulf States and comprise at least 250,000,000,000 feet of standing timber.

Southern Pine is now, and has been since 1900, the dominant soft wood of the country, constituting more than one-third of all the lumber of all kinds consumed in the United States.

Existing timber stands make certain that Southern Pine will continue to be a substantial factor in the national lumber trade.

The idea now prevalent, in some quarters, that the Southern Pine forests are near depletion, is erroneous. On the contrary, Southern Pine (original growth) is, and will long continue to be, available in large quantities in all standard sizes and grades. It will long continue to be especially well manufactured for flooring, mouldings, interior finish, dimension and lath; there is assured also adequate supplies of dense structural material.

Southern Pine Association
NEW ORLEANS LOUISIANA

Beautiful Entrances Deserve Koll Lock-Joint Columns

Many of America's leading architects express their faith in the architectural correctness of Koll Lock-Joint Columns by specifying them without making details.

Our 25 years' experience as the largest designers and builders of Columns, Pergolas, Rose Arbors, Garden Furniture and Accessories means much to the architect. It assures architectural correctness, structural perfection, clear material and positive permanence.

We can reproduce the beautiful entrance shown and scores of others, using famous Koll Lock-Joint Columns. Write for illustrated Catalog I-47.

Hartmann-Sanders Co., 2187 Elston Ave., Chicago
Showroom: 6 East 39th Street, New York City

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Koll Lock-Joint Columns—Pergolas—Rose Arbors
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MANY a *little* difference in materials makes a *big* difference to architects and roofing contractors.

Take the compound in a built-up roof for example—

Many compounds *smoke*—no great harm in that *but*—in the long run you pay for tons of volatile material that never goes on the roof.

Many compounds are dirty—contain foreign matter which is useless for roofing and necessitates frequent and costly delays for cleaning equipment.

Many compounds are easily affected by overheating—becoming hard, brittle and practically worthless.

Ruberoid Solid-cement on the other hand has none of these faults. It is 99.8% pure, practically smokeless, and free from dirt (kettles never need to be cleaned until the job is finished). It heats readily to mopping consistency but will stand unusually high temperatures without flashing or altering in composition.

* * *

Ruberoid Built-up Roofs are made of time-tested materials. They are as reasonable in price as thoroughly good roofs can be. Specifications, samples and descriptive booklets sent on request.

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Built-up Roofs

We have COMBINED FIVE BUILDING MATERIALS into ONE

Even Primitive Man Reinforced His Home

He knew and practiced the principle of *reinforcing*, for he embedded twigs in the clay of which he built his home.

National Steel Fabric Style P 214 is a galvanized wire fabric combined base and reinforcement for "back-plastered" interior plaster and exterior stucco. It is applied either direct to studs or over sheathing or insulation.

In National Steel Fabric Style P 214, *reinforcement*, sheathing, building paper, furring strips, and lath are all combined into one material which is installed in large sheets, by one man, in one operation.

Write for catalog and sample.

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Subsidiary of Pittsburgh Steel Co
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NATIONAL STEEL FABRIC CO

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Curtis Woodwork is available in so wide a variety of designs that less thought is required to adapt it to a plan than would be given to the creation of special designs.

That's Just What You Have in Curtis

English, Colonial, Southern, Bungalow or practically any other style of house can be equipped throughout with woodwork in perfect harmony with the type of architecture. The example shown on this page is the residence of Mr. C. F. Claiborne, Des Moines, Iowa, by Architect Le Roy Kranert. Curtis products embodied in this home are Stairway C-900, Mantel C-617, Trim C-1640, Entrance Columns C-1427, Shutters C-1168, Windows C-1024, and the Exterior Moldings and Frames.

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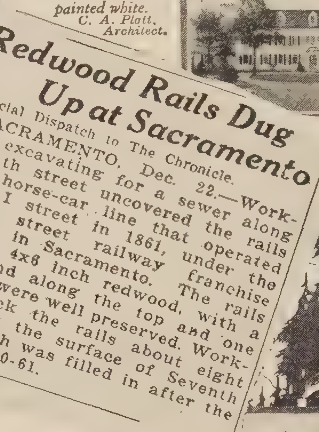
Interior of Redwood. Residence of Mr. Julius Rosenfeld, Sydney, N. S. W.

Residence at Eau Claire, Wis. Redwood Siding, painted white.
C. A. Platt, Architect.



Redwood Rails Dug Up at Sacramento

Special Dispatch to The Chronicle.

SACRAMENTO, Dec. 22.—Workmen excavating for a sewer along Seventh street uncovered the rails of a horse-car line that operated along I street in 1861, under the second street railway franchise granted in Sacramento. The rails were of 4x6 inch redwood, with a steel band along the top and one side, and were well preserved. Workmen struck the rails about eight feet below the surface of Seventh street which was filled in after the flood of 1860-61.

News item clipped from the San Francisco Chronicle.

Private Greenhouse built of Redwood at Buffalo, N. Y. Erected by King Construction Co., North Tonawanda, N. Y.

THAT Redwood lumber possesses remarkable rot-resisting properties is once more proved by the sound condition of the old, steel-bound Redwood street car rails referred to in this clipping.

Fungus, the arch enemy of most woods, does not attack Redwood. Boring worms and insects find it unattractive. A *natural,* odorless preservative which permeates every fibre of Redwood during growth protects Redwood against these wood-destroying agencies.

For shingles, clapboards, trim, rails, fences, porch columns and balusters, door and window frames, pergola, summer house, porch and greenhouse construction, for foundation timbers, mudsills or lattice work—wherever there's exposure to moisture or climatic variations—Redwood is unexcelled.

It takes and holds paint well, contains no highly inflammable resinous substances and reduces the fire hazard wherever used. Properly seasoned Redwood does not shrink, swell, warp or crack. Grade for grade it costs no more than other woods with far less rot resistance.

To acquaint Architects and Builders with Redwood's special fitness for architectural and building construction purposes we have compiled our "Construction Digest" which we will gladly send on request.

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THE PACIFIC LUMBER CO.

The Pacific Lumber Co.
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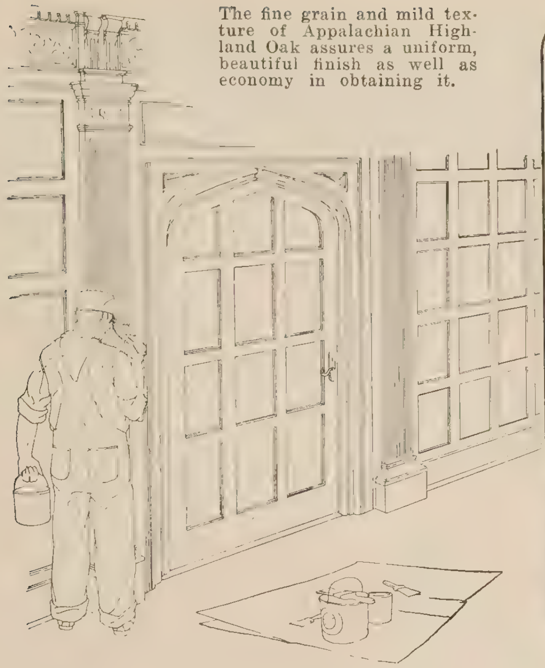
The Largest Manufacturers and Distributors of California Redwood



The fine grain and mild texture of Appalachian Highland Oak assures a uniform, beautiful finish as well as economy in obtaining it.

Some Facts About Oak Trim Not Generally Known

EVERY architect realizes the importance of trim on the effect of the interior as a whole, whether in the most pretentious church or the modest home. Few architects, we have learned, however, know how to be certain of obtaining the beauty they have conceived when their plans are passed on for execution.

Says a Columbus, Ohio, architect: "The facts simply haven't been given us. I didn't know that there was a *certain* method of obtaining beautiful oak trim or that timber growth had a thing to do with it."

We believe that there are other architects like this one. We believe the facts summed up below will prove valuable to the architectural profession.

1. *When You Specify by Grade*

The present standard rules for grading lumber, although considering the matter of imperfections such as knots, worm holes, sap, etc., give little or no consideration to grain, texture, or color. Therefore, when you specify by grade only, grain, texture and color are overlooked in the material furnished.

2. *Qualities Essential to Trim Beauty*

Beautiful interior trim cannot be obtained from lumber coarse and irregular in grain, uneven in texture and lacking uniformity in color. The source of trim beauty is in fine, close grain, in texture which readily and *evenly* absorbs finishing materials, and in lumber uniform in color and easily worked.

3. *Depend on Slow Growth*

These qualities depend on slow growth and favorable climatic conditions, and it is in the Appalachian Highland forests that slow growing timber is cut. Fast growth produces wide annular rings and coarse grain—slow growth, close annular rings and the resultant fine, beautiful grain.

4. *How You Can Be Certain*

The certain method of obtaining oak of fine grain, mild texture and uniform color for either trim or flooring is to specify not only the grade, but also locality of growth; namely, the Appalachian Highlands.

Millions of feet of Ritter Hardwoods are cut in the Appalachian region yearly. You can be certian of the quality you desire by asking for Ritter ***Appalachian Highland Oak.*** *Mail the attached coupon to us for further information.*

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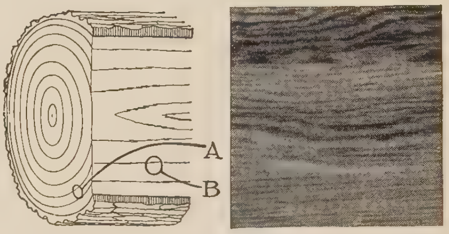
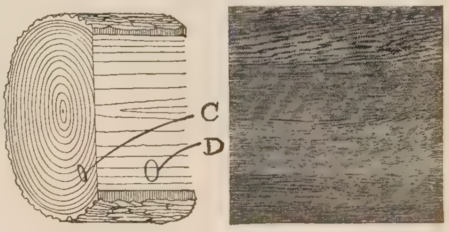


The reason for the coarse grain and lack of uniform color in the oak panel above is illustrated in the diagram opposite. (A) shows the wide annual rings which produce the coarse grain (B). Such is characteristic of fast-growing lowland oak.



Above is a panel of slow-growing Appalachian Oak, fine in grain, mild in texture and uniform in color. (C) shows the narrow annual rings which produce the fine grain (D). Such is characteristic of slow-growing highland oak.

Date..
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Gentlemen:
Kindly send me detailed information on Ritter Appalachian Hardwoods, explaining their many advantages for use in interior trim

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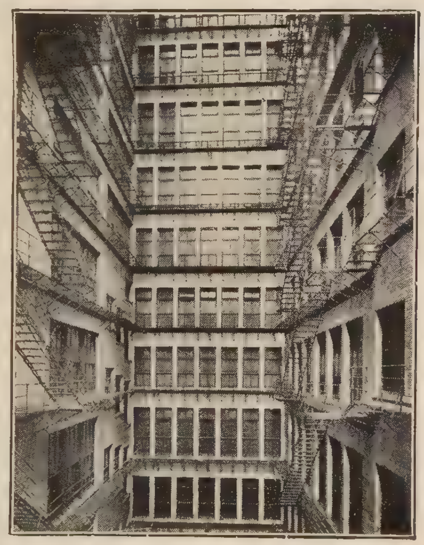

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The information we have gained through many years' experience is at your disposal. Our engineers will be glad to cooperate with you.

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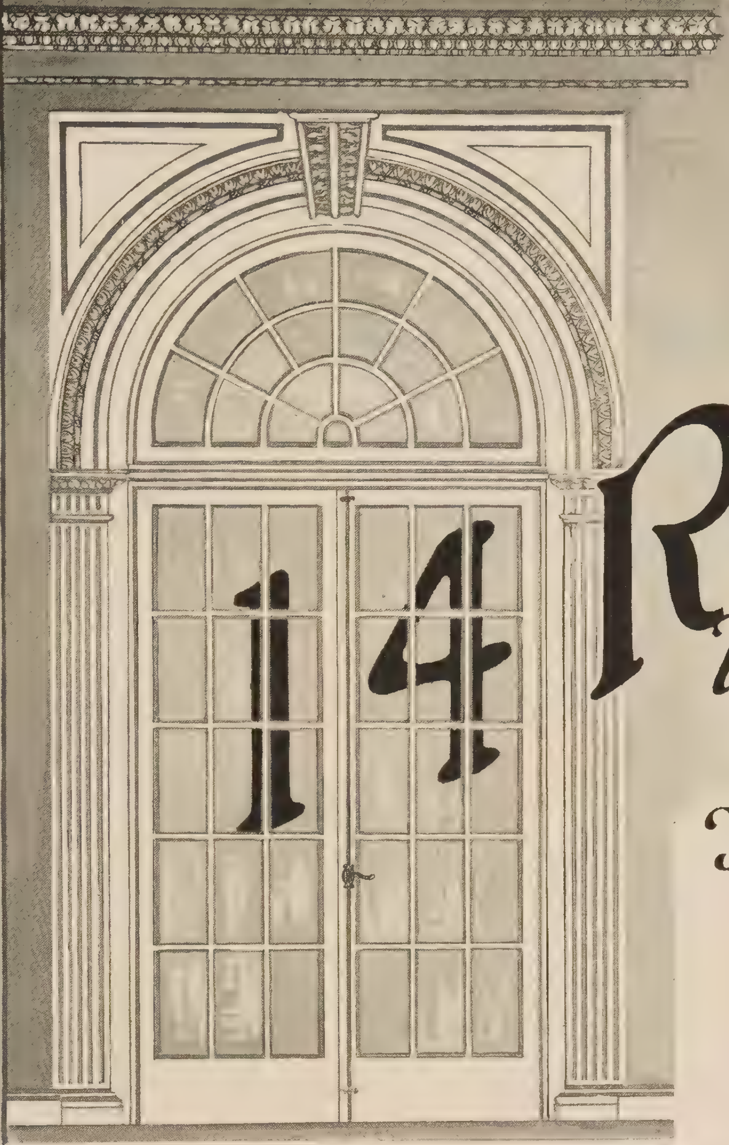

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6 Our glass is flat; it contains no reverse curves.

7 Our glass is uniform in thickness.

8 Our glass is perfectly annealed and therefore does not break as easily as poorly annealed glass.

9 Our glass is washed and thoroughly cleaned in an acid bath, which prevents discoloration and permits ready detection of defects.

10 Our glass cuts perfectly on both sides.

11 Our glass is graded to the highest standard of quality.

12 Our grading is the recognized standard for the United States, and is higher than the foreign standards.

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14 Our entire process is conducted on scientific principles.

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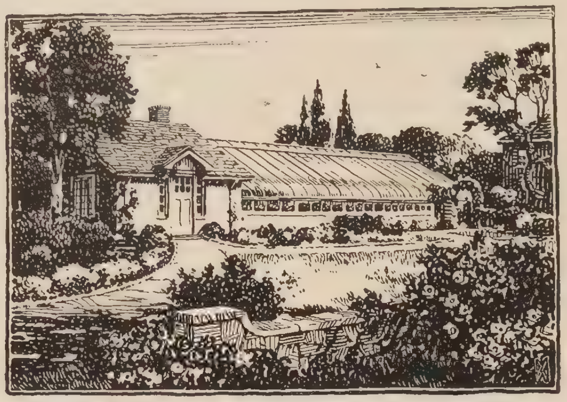

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CONCRETE WALLS	*S-W Concrete Wall Finish*	*Old Dutch Enamel,* Gloss		
CEMENT FLOORS	*S-W Concrete Floor Paint*	*S-W Concrete Floor Paint*		
EXTERIOR WOOD SURFACES	*SWP* (Sherwin-Williams Prepared Paint)	*Old Dutch Enamel,* Gloss	*S-W Preservative Shingle Stain* *S-W Acid or Oil Stain*	*Rexpar Varnish*
EXTERIOR METAL SURFACES	*Kromik Structural Steel Primer* *Metalastic* (for finishing coats)	*Old Dutch Enamel,* Gloss		
FACTORY WALLS (Interior)	*S-W Eg-Shel Mill White* *S-W Fume Resisting White*	*Old Dutch Enamel or Enameloid*		
FLOORS (Interior Wood)	*S-W Inside Floor Paint* (the enamel-like finish)	*S-W Inside Floor Paint* (the enamel-like finish)	*Oil Stain or Floorlac Varnish Stain*	*Mar-Not Floor Varnish*
GALVANIZED IRON SURFACES	*S-W Galvanized Iron Primer* (Finish with any Paint)	*S-W Galvanized Iron Primer and Old Dutch Enamel*		
INTERIOR WALLS AND CEILINGS	*Flat-Tone Wall Finish* *S-W Semi-Gloss Wall Finish*	*Old Dutch Enamel or Enameloid*		
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ROOFS—Metal	*SWP or Metalastic* (if Galvanized, prime with S-W Galvanized Iron Primer)			
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TO DAMP-PROOF FOUNDATIONS	*S-W Antydamp*			
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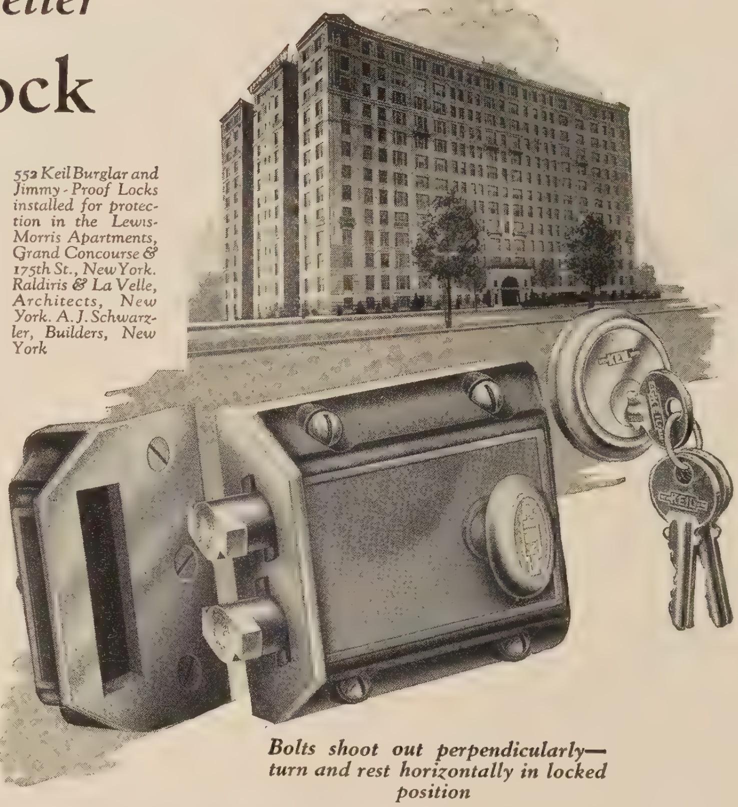

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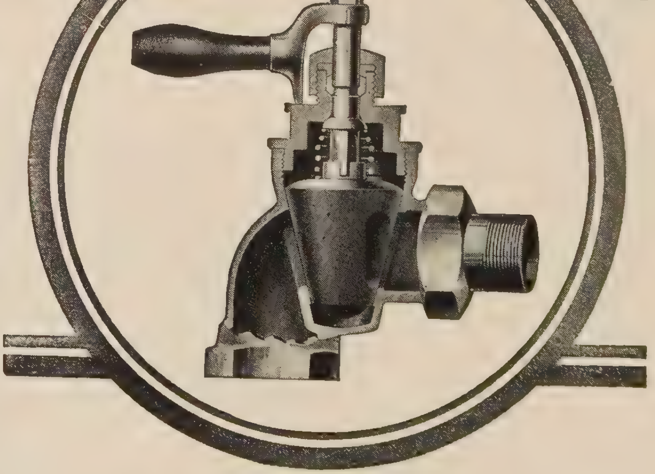

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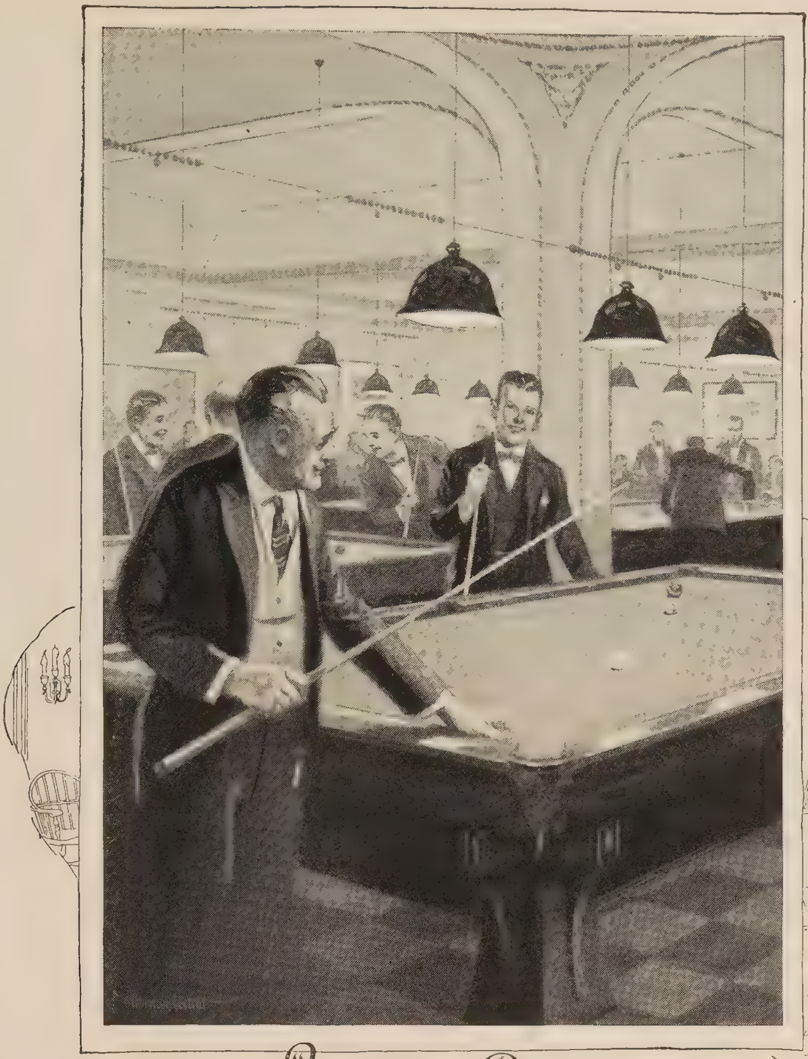

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A BILLIARD room in an apartment house, hotel or similar building offers excellent opportunities for increasing the returns from the property.

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At stationers, drafting supply dealers and stores throughout the world.

VENUS ERASERS
The first Eraser of its kind made in America—and *still the best.* 12 sizes.

American Lead Pencil Co.
229 Fifth Avenue, New York
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Send coupon today for free sample

Send samples VENUS degrees checked below—and a VENUS ERASER.

For bold heavy lines	6B-5B-4B-3B
For general writing and sketching	2B-B-HB-F-H
For clean, fine lines	2H-3H-4H-5H-6H
For delicate, thin lines	7H-8H-9H

Name ....
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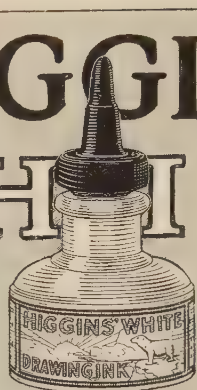
HIGGINS' WHITE



Drawing Ink

Completing a Line From Which Any Color Combination May Be Obtained

RESULTS far superior to water colors. May be mixed with Higgins' Colored Drawing Inks to secure any shade or tint or to render the color opaque.

Higgins' White Ink is free flowing, waterproof, and consequently ideal for correcting blue, black or brown prints and tracings. Positively guaranteed against caking, hardening or coagulation.

Available only in 3/4 oz. Bottles

CHAS. M. HIGGINS & CO.
271 Ninth St., Brooklyn, N. Y.
CHICAGO LONDON

PUMPS

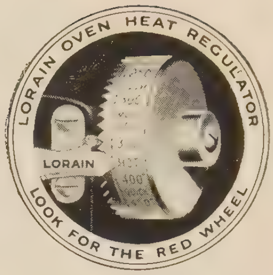
A type for every service

Bulletins on request

THE GOULDS MANUFACTURING CO.
SENECA FALLS, N. Y.

GOULDS

Kitchen of the Masonic Temple, Webster Groves, Mo., equipped with Quick Meal Gas Ovens with Lorain Oven Heat Regulators.



One easy turn of the Lorain Red Wheel gives the housewife a choice of 44 measured and controlled oven heats for any kind of oven cooking or baking.

Masonic Temple, Webster Groves, Mo.

The *Most Modern* Kitchens Have Lorain-equipped Gas Ranges

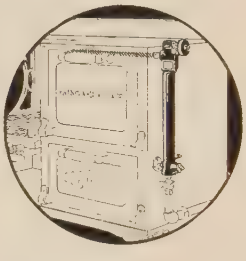
A GAS RANGE equipped with the Lorain Oven Heat Regulator represents the highest achievement ever reached in the development of an appliance for the cooking of foods because it makes possible perfect results every time. Any kitchen that has a gas range *without* Lorain cannot be said to have the *most modern* cookery equipment.

Not alone in thousands upon thousands of homes but in hundreds of churches, hospitals, schools and fraternal organization structures, where food well-cooked for many people with minimum expenditure of time and labor is required, gas ranges equipped with the Lorain Oven Heat Regulator are regarded as ideal cookery appliances.

The Lorain Oven Heat Regulator automatically regulates and controls the heat of the oven, thereby making possible cooking without constant watching. Lorain also makes it possible to can fruits and vegetables in the oven with minimum effort and perfect results.

Also—once anyone has cooked or baked any dish successfully it is merely necessary to use the same Time and Temperature for the same dish to insure equally successful results every time thereafter.

Lorain-equipped Gas Ranges are also used in thousands of the finest apartment houses, and in nearly a thousand of the leading schools and colleges for instruction in Cookery. For specific data as to sizes, styles, etc., see pages 2315-24 inclusive, 18th Edition Sweet's Architectural Catalog. Prices, catalogs and other data furnished on request.



View showing application of the Lorain Oven Heat Regulator to the gas range oven.

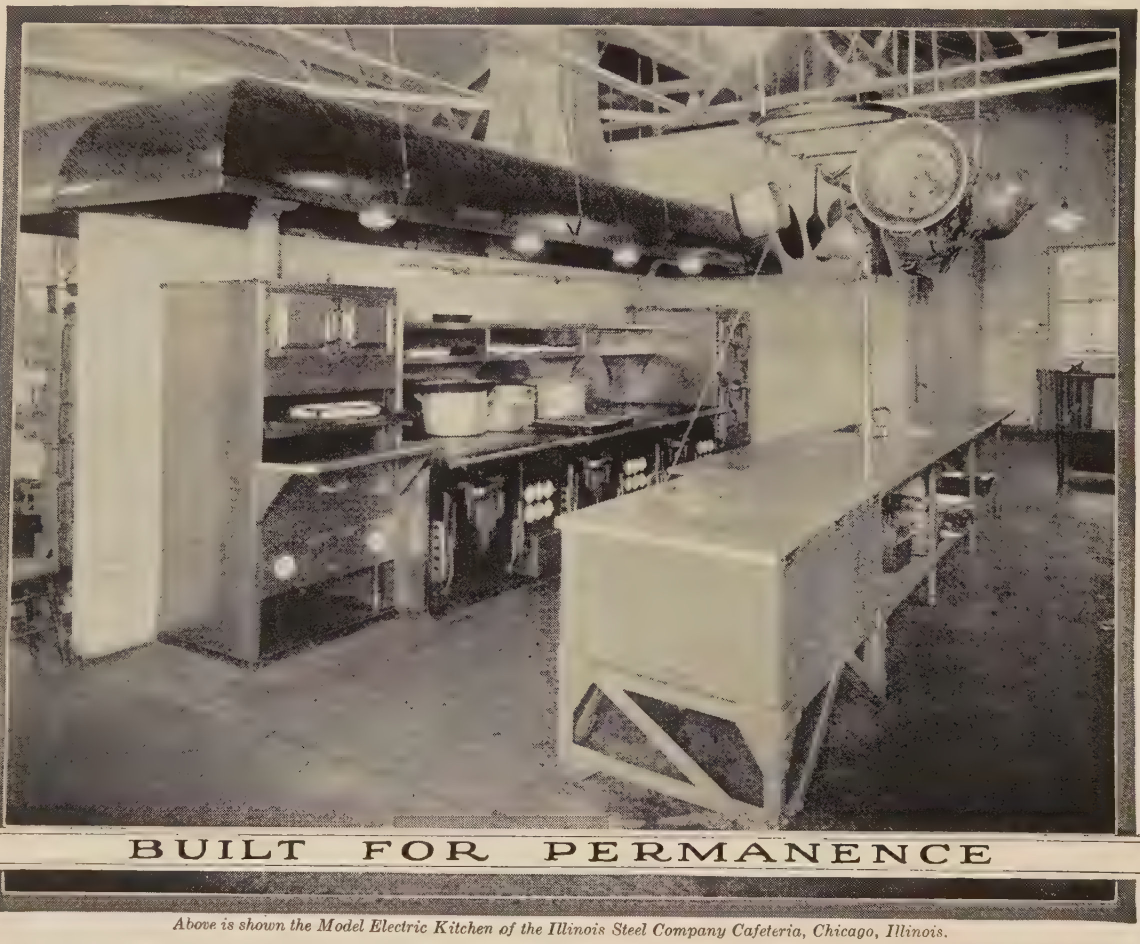
These famous gas stoves are equipped with the Lorain Oven Heat Regulator: New Process, Quick Meal, Reliable, Clark Jewel, Dangler, Direct Action.

The American Architect Specification Manual
Contains our Standard Specifications

AMERICAN STOVE COMPANY, 444 Chouteau Ave., St. Louis, Mo.
Largest Makers of Gas Ranges in the World

LORAIN OVEN HEAT REGULATOR

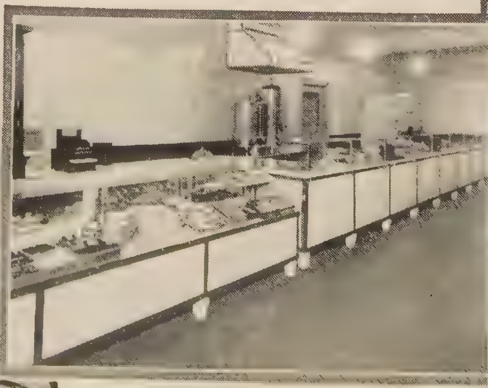
PIX Heavy Duty Now Chosen for the



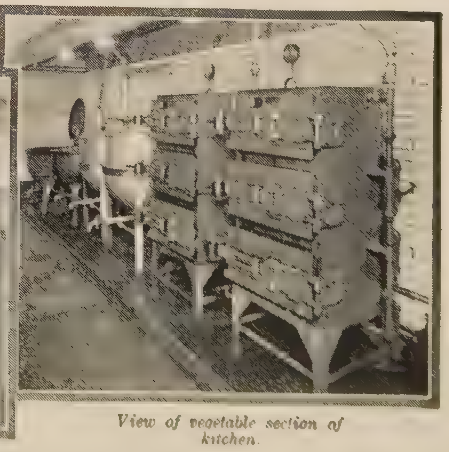
Above is shown the Model Electric Kitchen of the Illinois Steel Company Cafeteria, Chicago, Illinois.

The Employes' Cafeteria of the Illinois Steel Company occupies all of a two story building. The main cafeteria, which is on the second floor, seats 240 and feeds on the average of 7,000 people every twenty-four hours from two large cafeteria counters. The first floor is used for a quick lunch counter and cigar case, store rooms and commissary for the cafeteria. Here there is also the large dishwashing department which is connected with the cafeteria proper by a special conveyor. The kitchen, which is on the second floor, is divided by a semi-partition, one side of which is the vegetable section with two Pix Steamers and four jacketed kettles. On the other side is the Pix Electric Broiler, Pix Double Electric Roasting Oven and three Pix Heavy Duty Electric Ranges. All equipment in the cafeteria and kitchens was furnished by Albert Pick & Company.

Below, A general view of the main cafeteria.



First floor lunch counter for quick lunches.



View of vegetable section of kitchen.

Equipment — Model Electric Kitchen!

THE Illinois Steel Company have just opened at their Chicago plant a model industrial restaurant, one of the finest and most complete in the country. This establishment is unusual in that it is in constant operation twenty-four hours a day every day in the year. Before proceeding with this cafeteria, the officials of the Illinois Steel Company and engineers and technicians connected with them conducted an exhaustive investigationto decide just what type of equipment, what design and what construction would best stand up under the heavy service they demanded. It is an interesting sign of the times that the decision thus reached was to use Electric Kitchen Equipment wherever possible. It is equally important that they decided that by using the very finest equipment obtainable they could achieve the greatest ultimate economy. In the light of these two decisions we believe their selection of Pix Heavy Duty Electric Equipment has a particular significance.

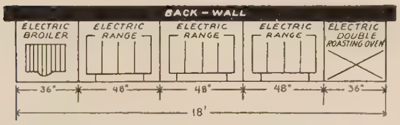
Albert Pick & Company manufacture Electric Kitchen Equipment in practically any of the items which have hitherto been generally heated by gas, coal, charcoal or, in some cases, steam. The more important of such items are:

RANGES
BROILERS
ROASTING OVENS
COFFEE URNS
STEAM TABLES
BAIN MARIES
GRIDDLE AND WAFFLE RANGES
DISH WARMERS
ROLL WARMERS

We will be pleased to supply complete information about these or any other items, and we are in position to advise prospective users or their architects concerning the use of such equipment and the advantages to be attained.

Our engineers will be glad to assist you and your architects in the formulation of your plans. This will incur no obligation on your part whatsoever. Send for our Kitchen Installation Booklet BH90.

ALBERT PICK & COMPANY
208-224 WEST RANDOLPH STREET
CHICAGO, ILLINOIS



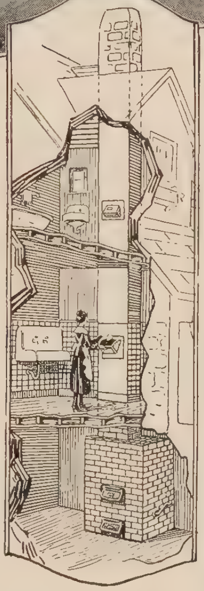
Floor Plan showing the arrangement of Pix Ranges, Broiler and Roasting Oven in the Model Electric Kitchen of the Illinois Steel Company Cafeteria.

At the right is shown a Pix Double Electric Roasting Oven under construction in our shops. The use of this piece of equipment in kitchens where the range work is divided among several cooks gives a material economy not only in the cost of equipment but in space requirements. Its use in the model Illinois Steel Company Cafeteria is illustrated above.

This advertisement is one of a series taking you behind the scenes in the manufacture of PIX Equipment.

Kernerator-equipped Duplex apartment, Milwaukee. Thomas Van Alyea, architect.

"Duplex" Design Cries out for this Convenience



DISPOSAL of garbage and waste, particularly from the second floor apartment, is a nuisance inherent in modern "duplex" residence construction. Hence it is that, other things being equal, the Kernerator-equipped "duplex" is assured of steady rental and is a source of constant satisfaction to owner and tenant.

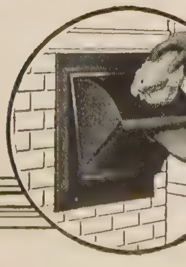
The small initial investment soon pays its way, for there is *no up-keep cost.* The garbage, sweepings, tin cans, broken glass — in fact litter and waste of all sorts—dropped through the hopper doors in or near both kitchens, falls to a brick combustion chamber, built at the base of the chimney in the basement when the building is erected. There, an occasional lighting burns everything combustible, while non-combustibles, flame-sterilized, are removed with the ashes. *There is no fuel required.*

Pages 2340-41, Sweet's (1923) contain full details. For additional information, or references as to nearby installations, write —

KERNER INCINERATOR COMPANY
1015 CHESTNUT STREET MILWAUKEE, WIS.

KERNERATOR
Built-in-the-Chimney
REG. U. S. PATENT OFFICE

Drop all waste here



—then FORGET it!

For Built-In Refrigerators

BUILT-IN refrigerators are popular because of their great convenience. How much more popular, however, is a built-in refrigerator that never requires icing, and that can be located anywhere in the home regardless of the convenience of the ice man. Frigidaire, the electric refrigerator, makes possible this type of built-in refrigerator.

Frigidaire provides a constant, dry cold and a temperature that Government experts and scientists agree is necessary for the proper preservation of food. Thus Frigidaire not only provides a greater convenience, doing away with the muss and nuisance of ice, but actually provides a better safeguard for the health of the family.

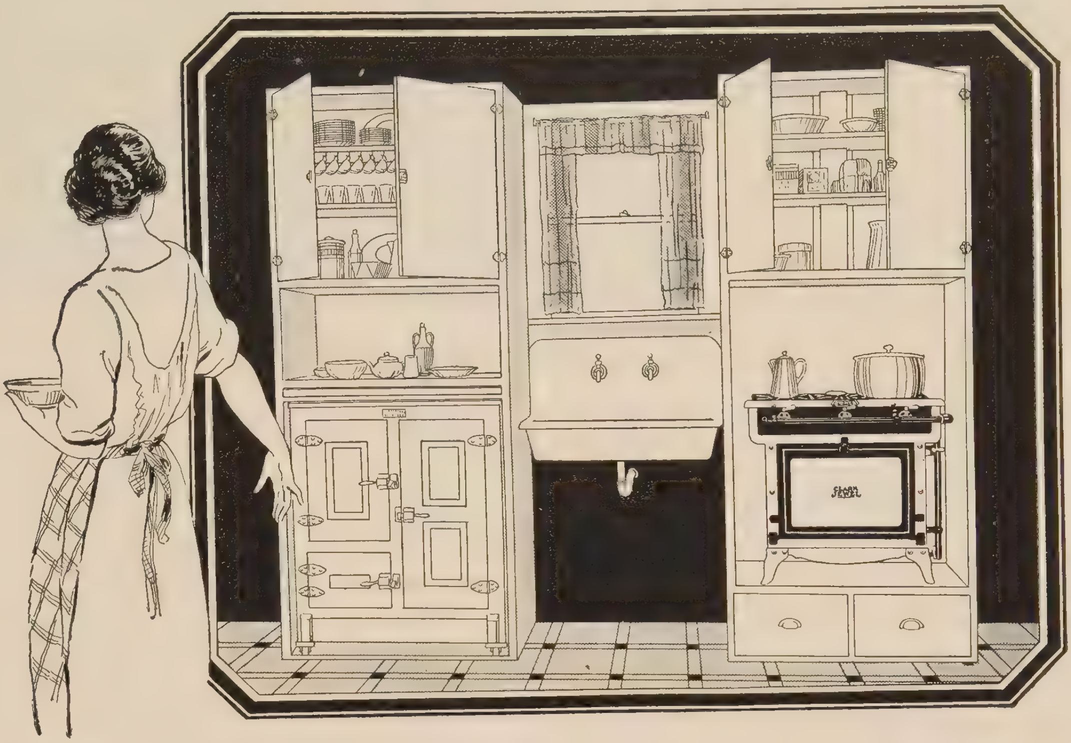
Frigidaire cooling units can be purchased to fit almost any icebox, or if you prefer, the Frigidaire can be furnished complete with icebox and apparatus all self-contained.

Send for our booklet—A.F.-5

DELCO-LIGHT COMPANY
Subsidiary General Motors Corporation
Dayton, Ohio

Frigidaire
Electric Refrigeration
Frigidaire
Product of General Motors

Architects Can Lower Building Costs and Increase Rental Values by Specifying:



Betzco Kitchunits

In order to meet present building requirements, the architect finds it necessary to take advantage of every possible method by which building costs may be reduced. When any way offers which increases rental values at the same time reducing the building costs, such as is the case when Betzco Steel Kitchunits are specified in the plan, it is of particular interest.

Kitchunits are made in definite units, which can be combined in convenient arrangement or installed singly. The unit idea not only adds materially to economy in manufacture, but also greatly simplifies the work of the architect and the cost of installation.

Kitchunits are made throughout of heavy gauge furniture steel, welded into a single, solid piece rigid and strong through long years of service and without cracks and crevices for vermin and dirt. The units are finished in washable enamel, even baked after each coat, giving a durable finish that is easily kept clean and spotless.

The satisfaction of the user is the ultimate test of every device. Thousands of owners have found that Kitchunits satisfy and please their tenants and make their apartments easier to lease. Such endorsement combined with the moderate cost and superior construction make Kitchunits the logical choice of discriminating architects, builders and owners.

The fact that Betzco Kitchunits are made in four different style units, each identical in over-all dimensions, makes them readily interchangeable and permits the combination of any number of units, according to available space and requirements.

FRANK S. BETZ COMPANY

HAMMOND, IND.

CHICAGO
30 E. Randolph St.

NEW YORK
6-8 W. 48th St.

THE BETZCO HOSPITAL BOOK
yours for the asking

FRANK S. BETZ COMPANY, Hammond, Ind.

Gentlemen:

Without obligating me in any way, I desire that you send me complete literature on the Betzco Steel Kitchunit, and also the Betzco Hospital Book which illustrates and describes your complete line of steel equipment for hospitals and institutions.

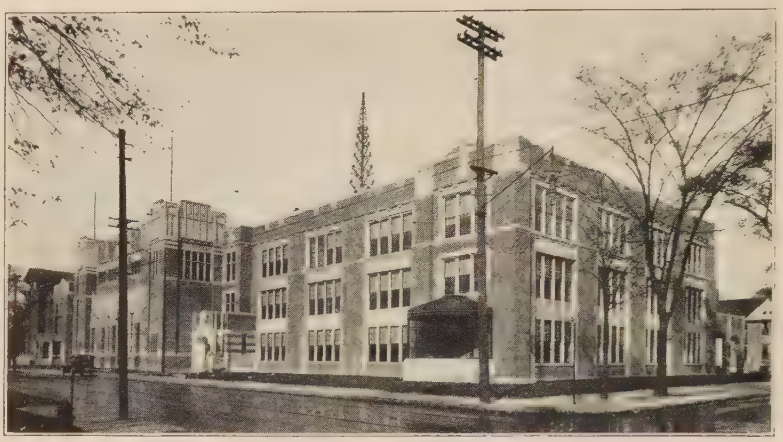
NAME ....

OCCUPATION .... ADDRESS ....

CITY .... STATE ....

GODER
INCINERATORS

Time Tested
Service-tried



Jefferson School, Detroit, Mich.
Malconson, Higginbotham and Palmer, *Architects*

THE Goder principle of incineration is applicable to any type or size of building, old or new, under construction or in plan. Regardless of how intricate or complex the problem of waste disposal may appear to be, Goder Engineers will furnish a type of incinerator to solve it for all time to come.

The Jefferson School in Detroit, the Pennsylvania Railroad Elevator of Baltimore, the Illinois Merchants Bank of Chicago and many other similar installations are notable examples of the efficiency with which the Goder organization has met the many and varied problems of waste disposal.

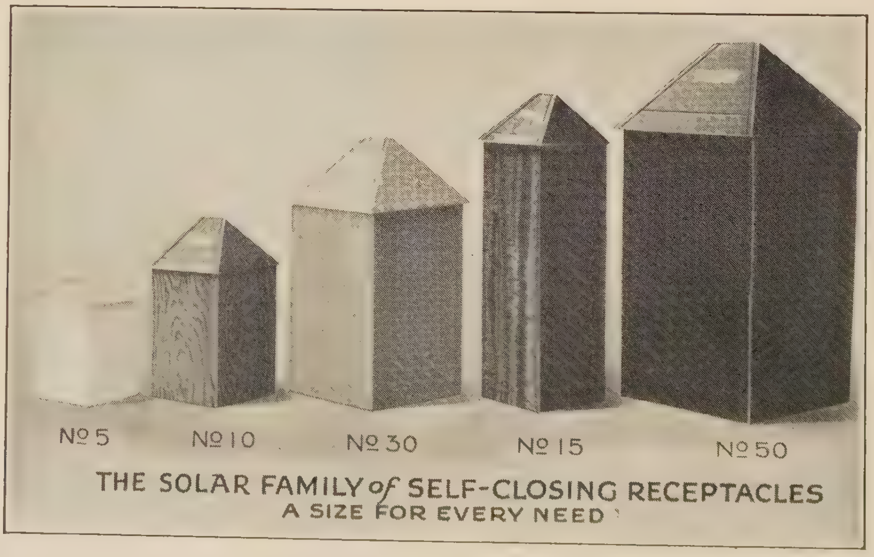
Write today for Bulletin No. 12, which furnishes general information and data for architects and engineers.

GODER INCINERATOR CORP.
323 North Michigan Boulevard, Chicago

THE SOLAR SYSTEM
of Waste Collection
Invites and Compels Neatness

For the
Collection
of

Waste Paper
Towels
Linens
Paper Cups
Trash and
Refuse of all kinds



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Write for Literature

CORTES WARD CO. Inc., 245 W. 55th St., New York

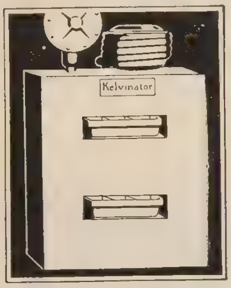
Facts About Kelvinator Electric Refrigeration

Kelvinator, established in 1914, is the oldest domestic electric refrigeration.

It has a firmly established organization of distribution and service, international in its scope.

Kelvinator is so well designed that it can be installed in any standard refrigerator. The cooling tank which is placed in the ice compartment, simply takes the place of a cake of ice.

Kelvinator is scientifically and mechanically right. *It has never changed its basic design and principle.* Its principle is correct, and that principle is applied by highly skilled, conscientious workmen, employing only the finest materials.



Manufactured in a factory especially built and equipped for its sole production, no Kelvinator is permitted to leave the factory until it has been submitted to tests of far greater severity than it will ever be given in practical and every day use.

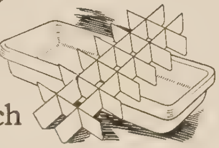
Kelvinator is deliberately built to give service over a long period of years. It is precisely because it *does give such* service that Kelvinator has won universal approval and has attained positive leadership.

The Convenience of Kelvinator

Kelvinator eliminates the trouble of ice. There is no inconvenience, no dirt, no "waiting for the ice man."

Kelvinator maintains a dry, wholesome even temperature, much colder than ice.

This perfectly dry, constant refrigeration keeps food much better and longer, prevents food waste and safeguards health.



Kelvinator freezes ice for table use. Another outstanding advantage is the ease with which delicious frozen desserts and delicacies can be prepared. Kelvinator is an invaluable aid to the hostess.

In convenience, in economy, in actual comfort, Kelvinator satisfies in every way the nation wide demand for home refrigeration.

What Kelvinator Owners Think

Kelvinator is endorsed by the Good Housekeeping Institute, the New York Tribune Institute, the Modern Priscilla Proving Plant and best of all by thousands of satisfied owners.

What Owners think is extremely important. Talk with owners of Kelvinator. They will tell you it will do everything we say—and more. They will make you sure of the satisfaction Kelvinator gives before you specify or recommend it.

Because of these facts, the "Investigating Committees of Architects and Engineers" New York City, endorse it and scores of leading architects and builders everywhere are including Kelvinator in their plans and specifications.

Write for your copy of "Specifications and Data" and name of nearest dealer.

Kelvinator Corporation
2030 W. Fort St. Detroit, Mich.

Established 1914

Kelvinator
Electric Refrigeration

Up-to-date stimulate church

Years ago when planning churches no provision was ever made for kitchens. Today, church social activities play an important part in a community. They promote good, friendly feeling. Stimulate new interest.

Suppers are usually the biggest job. Feeding several hundred people in a short time is not easy. It requires a kitchen as carefully planned and as well equipped as a hotel or restaurant—even though its use is not constant.

The most important piece of cooking equipment is the gas range. It is the backbone of the kitchen.

VULCAN
Economy Hot-Top
Gas Ranges

PHOTOGRAPHS BY
MATTIE E. HEWITT

PARK AVENUE
BAPTIST CHURCH
New York City
Architect
Henry C. Pelton

kitchens activities ~

The success of a church supper depends more upon the efficiency of the cooking range than any other part of the kitchen. Vulcan ranges are successfully meeting the requirements of many churches.

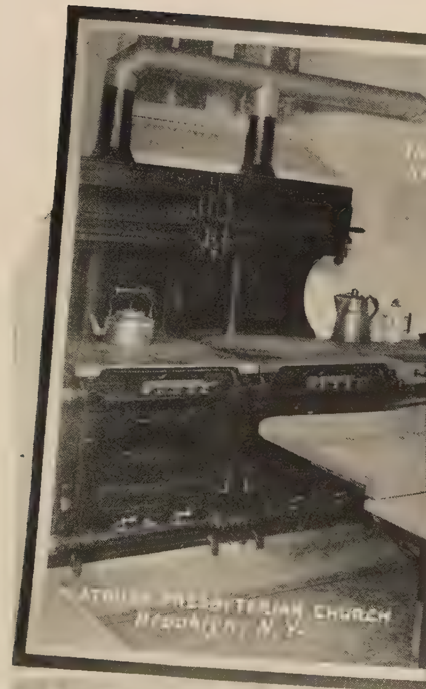
Henry C. Pelton, architect of the famous Park Avenue Baptist Church, agrees with us. He planned this church to suit its present activities. It has two well-arranged, well-lighted and ventilated kitchens which are playing an important part in the social life of the congregation and societies.

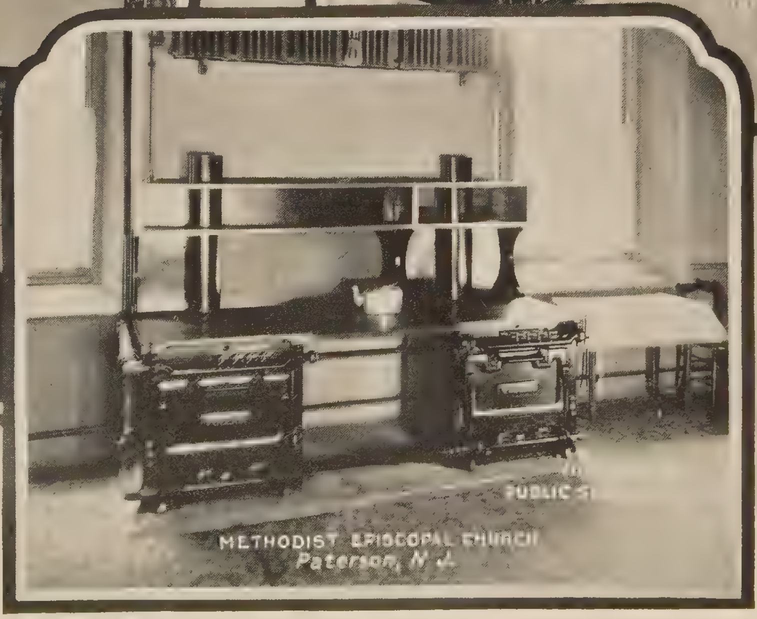
Ask for the catalogue and get the whole story.

WM. M. CRANE CO.

Gas Range Headquarters

18-20 E. 41st St. New York





Van Equipment—

For preparation and serving of food

The enduring quality of their equipment has built for The John Van Range Company an enviable name.

For years Van kitchen and dining room equipment has been giving unfailing satisfaction to hotels, restaurants, clubs and institutions.

Van engineers and food service experts are glad to co-operate with you in all details up to the completion of the installation.

Our 364-page catalog, showing all equipment necessary for the dining-room and kitchen, is indispensable to buyers of such commodities. Write for it today.

Nothing too large or too small for Van to handle.

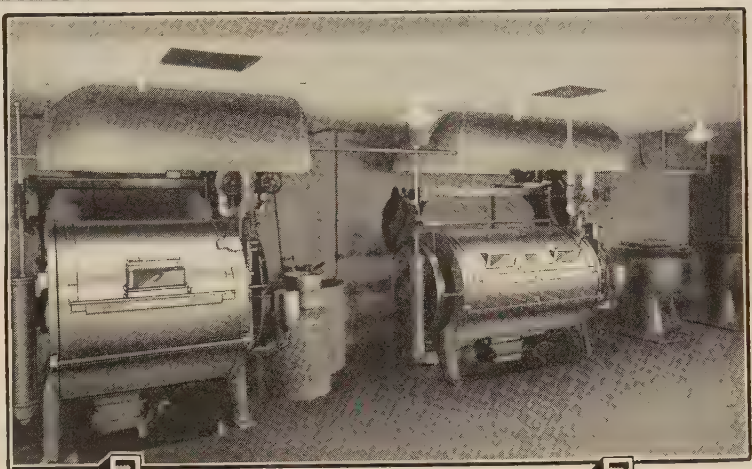
The John Van Range Co.
EQUIPMENT FOR THE PREPARATION AND SERVING OF FOOD
Cincinnati

CHICAGO OMAHA NEW ORLEANS DETROIT CLEVELAND

"That Enduring Quality"

Wade Park Manor Hotel, Cleveland, Ohio. Architect George B. Post & Sons, New York City.

Monel Metal Cascade Washers at Wade Park Manor Hotel. Manufactured and installed by the AMERICAN LAUNDRY MACHINERY CO. CINCINNATI, OHIO.



INCo

MOnel metal

"Wade Park" Followed the Advice of Men Who Know

WHEN the builders of the imposing Wade Park Manor Hotel in Cleveland, Ohio came to install the hotel laundry, they followed the recommendations of experienced steam laundry men.

And these recommendations included Monel Metal equipment.

Monel Metal prevents staining of the wash. It will not rust and it resists the corrosive action of soap and bleach used in laundries. Monel Metal's steel-like strength combined with its other unique properties makes possible the manufacture of laundry equipment of unusually long life.

It was but natural that the choice of experienced laundry men would be Monel Metal.

In order to give your clients the benefit of your advice you should have all the facts in your files. Write today for complete information and List B of available literature.

THE INTERNATIONAL NICKEL COMPANY
67 WALL STREET NEW YORK CITY

Now — Hot rolled rods and sheets — cold drawn rods — of pure Nickel are available at important distribution points throughout the country.

INCo
Nickel

When Rust sows its ugly seed

That great destroyer of metals—Rust—works persistently, and oftentimes unnoticed by the casual eye.

Consider that every metal surface near you is subjected to the destructive action of the atmosphere as well as to attacks from other sources. No wonder you ask, "Is there no material that will withstand these onslaughts?"

Monel Metal has been used for many varied types of equipment and construction because

—it will not rust,

—it is more generally resistant to corrosion than any other commercial metal,

—its strength is not materially lessened by high temperatures,

—hot gases do not destructively oxidize its surfaces,

—its great strength enables it to withstand the wear of constant use.

In color, Monel Metal is silver white and will take an attractive surface finish. In strength, it is the equal of steel. Its price in the long run is no greater than that of other and less enduring metals.

Monel Metal is produced in rod, sheet, ingot, wire, shot and other common commercial forms. It has proved invaluable for products exposed to weather, corrosive influences and general hard usage.

Always remember this! Equipment or construction fabricated of Monel Metal is built to last—it WILL endure.

Monel Metal can be machined, cast, forged, spun, punched, drawn, brazed, soldered and welded. Wherever it is used, wear and corrosion are largely prevented. To help solve your metal problems you may have the benefit of our experience. Write for List B of available literature.

INCo

Monel Metal is a technically controlled Nickel-Copper alloy of high nickel content. It is mined, smelted, refined, rolled and marketed solely by The International Nickel Company. The name "Monel Metal" is a registered trade mark.

INCo MONEL METAL

INCo NICKEL

THE INTERNATIONAL NICKEL COMPANY, 67 WALL STREET, NEW YORK CITY.

Herewith is pictured the residence of J. M. Studebaker III at Sunnyside, South Bend, Ind., Austin & Shambleau, Architects, one of the many fine town and country homes equipped with a McCray refrigerator

Built to Serve, and *Endure*

You architects appreciate the handsome exterior of a structure, but you know that many of the qualities that will give the owner enduring satisfaction lie hidden from the eye. The same is true of a refrigerator.

The name McCray on a refrigerator signifies in-built quality that goes through to every hidden detail. Efficiency is built into the McCray by the use of highest grade materials—each proved best for its particular purpose—expert craftsmanship, rigid adherence to the highest ideals of quality and the McCray patented system which assures a constant circulation of cold, dry air through every compartment.

You will find McCray refrigerators—not only in the finest homes—but in the foremost hotels, clubs, hospitals, institutions, florist shops, grocery stores and markets. McCray builds refrigerators for *every purpose.*

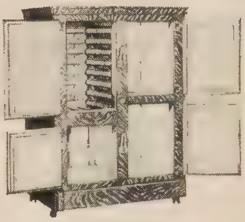
Send for our latest catalogs for your files. McCray builds to order to meet any requirement and will gladly co-operate with you in every way possible. *Free Blue Prints* of suggested equipment will be provided—simply send a sketch of your client's requirements.

McCray Refrigerator Co.

Lake Street, Dept. 55 Kendallville, Ind.

SALESROOMS IN ALL PRINCIPAL CITIES
(See Telephone Directory)

McCRAY
REFRIGERATORS
for all purposes



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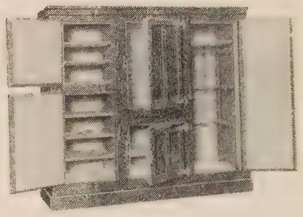

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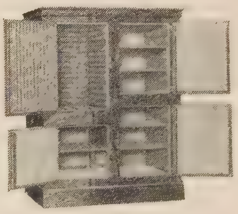

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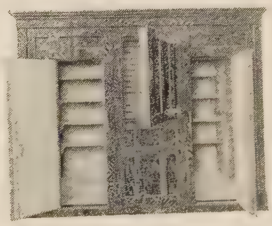

McCRAY NO. 171

HOT WATER

ANNOUNCING a complete new line of New Perfection Kerosene-Burning Water Heaters equal in satisfaction, dependability and operating economy to the gas heater—the greatest achievement since the introduction of the instantaneous heater.

You will instantly appreciate the tremendous importance of this announcement. There is a universal demand for an abundant supply of running hot water which heretofore could only be satisfied in homes having gas. Yet here is a remarkable new line of kerosene water heaters that provides hot water with *all* the satisfaction of gas.

Now, for the first time you can recommend the installation of water supply systems in *every* home without gas, knowing that the problem of *heating* the water has been solved to your entire satisfaction.

"Thermostat" and "Stay-Hot" Tank are New Ideas in Kerosene Water Heaters

A thermostat that automatically turns the flame out when the tank is full of hot water and a storage tank which keeps the water hot for 36 hours after the flame is extinguished, are new and revolutionary ideas in the kerosene water heater field.

Of equal importance is the application of the powerful Giant Superfex Burner to the heating of water. It is the only oil stove burner made which gives the quick, intense heat of gas.

These big new features place our kerosene burning water heaters on a par with gas, for the first time.

Complete Line Meets Every Need

The three New Perfection Water Heaters, pictured here make up a line that meets every need. The No. 431 "Stay-Hot" Heater is the finest kerosene heater ever offered. The No. 421 "Side Arm" Heater is of the same high quality and heating efficiency but is designed for use with the ordinary 30 gallon tank. Both models are equipped with the Giant Superfex Burner; copper coils; thermostatic shut-off and two oil reservoirs.

The No. 412 "Side-Arm" Heater is the most efficient, dependable and satisfactory heater in the popular priced field. Will heat water just as quickly as the No. 421. It has two New Perfection Blue Chimney Burners of the improved, double-wall, double-draft type. They are easy and quick to light, always clean and dependable.

A Product You Will Want to Recommend

Behind this new line are 25 years of experience and the resources of the world's largest maker of oil burning devices. New Perfection oil burners are giving daily satisfaction in more than 4,500,000 homes.

Write for complete catalog, detailed specifications and prices. Your contractor can secure the heaters through leading plumbing jobbers, plumbers and hardware dealers.

The GIANT Superfex Burner

Here is the "Big Giant" oil burner which has made possible this great new water heater achievement. In the two years since its invention it has proved a tremendous success on more than 100,000 of our highest quality New Perfection ranges.

THE CLEVELAND METAL PRODUCTS CO.
7550 Platt Avenue
Cleveland, Ohio

Also makers of New Perfection Oil Cook Stoves, Ranges and Room Heaters.

Send me the complete story about your new line of Kerosene-Burning Water Heaters.

Name

Address

Business

THE CLEVELAND METAL
PRODUCTS CO.
7550 Platt Ave.
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OF THE
PLUMBING AND HEATING INDUSTRY
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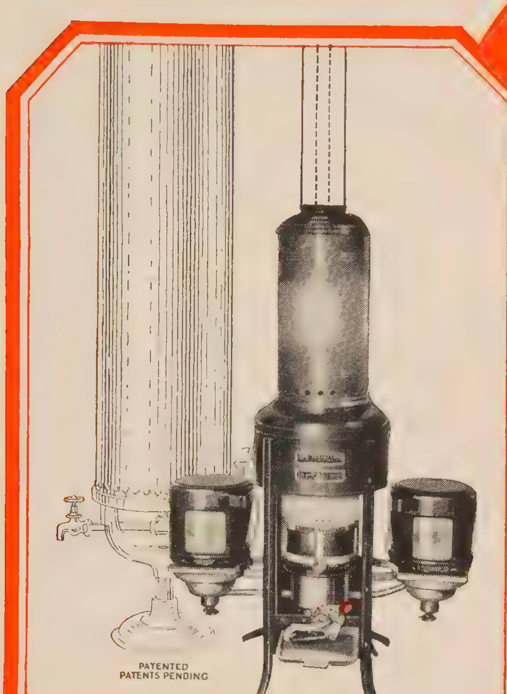
NEW

mail this coupon today for complete catalog and prices

for Millions of Homes without Gas

The "Stay-Hot" Storage Tank

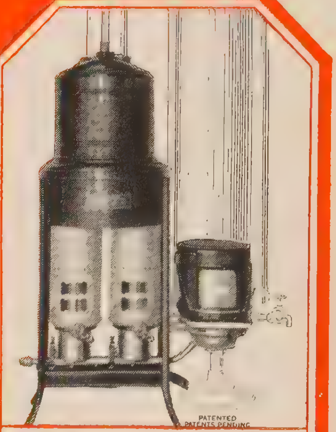
AFTER the thermostat has automatically turned out the flame, this new "Stay-Hot" Heater No. 431 (shown at the left) keeps water at clothes-washing heat or above for 6 hours; at dish-washing heat or above for 13 hours; at bath heat or above for 36 hours.



Side Arm Heater No. 421

The finest side arm kerosene water heater made. Equipped with heavy cast bronze header with special heat collecting fins and connected directly to the 42 foot triple copper coil; double insulating jacket around coils; Giant Superfex Burner; dual thermostatic shut-off; rigid adjustable legs; two one gallon reversible oil reservoirs.

Heats plenty of water for washing or shaving in 5 minutes—for dish-washing in 10 minutes—for a bath in 30 minutes.



"Side-Arm" Heater No. 412

A heater that is without an equal in the popular priced field. Equipped with four cast iron heating units; double insulating jacket; two of the new improved double draft Blue Chimney burners; a one gallon, reversible oil reservoir; rigid frame with adjustable legs. Heats water as quickly as the No. 421.

The Thermostatic Shut-Off

It turns out the flame automatically when the tank is full of hot water. Used on Heaters No. 431 and 421.

"Stay-Hot" Heater No. 431

A complete outfit, consisting of the new "Stay-Hot" tank (copper bearing steel, 30 gal. size); a 28 foot double copper coil in center flue of tank; Giant Superfex Burner; dual thermostatic shut-off; two one-gallon reversible oil reservoirs.

Heats an abundance of water for washing or shaving in five minutes—for washing dishes in 10 minutes—for a bath in 30 minutes.

PERFECTION

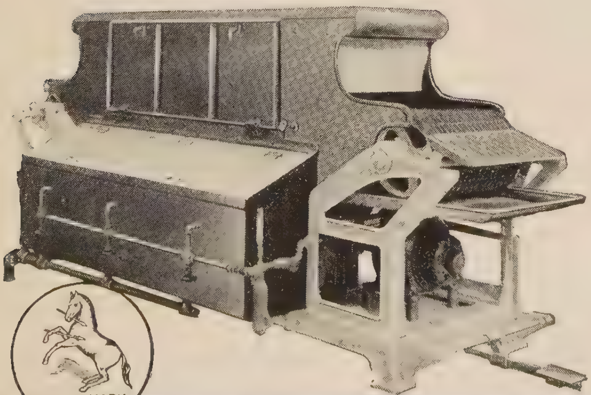
Kerosene Water Heaters

Here's Where You Can Save Him Money

WHEN you plan a hotel, restaurant, cafeteria or club kitchen, there's one proven way of saving money, (60% in dish breakage; 50% in payrolls) guaranteeing efficiency and insuring satisfaction. Use Autosan Dishwashing Equipment.

Autosan economizes in floor space as well as in labor, water and electricity. It washes dishes scientifically and more thoroughly than any other known device. Built of bronze, copper and brass throughout, long life and better service are assured.

Efficiency and profitable management call for modern methods. When you decide on The Autosan in planning kitchen space, you are rendering a service to your client that will pay you many dividends in lasting satisfaction. Made in models to suit practically every need, Autosans are proving their worth in leading hotels, restaurants and clubs throughout the country.



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Colt's Patent Fire Arms Mfg. Co.
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A-S-123

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DISH AND SILVER CLEANING MACHINE

COLORMIX

It makes concrete beautiful—

CONCRETE becomes more decorative (as well as more durable) when COLORMIX—the perfected, hardening concrete dye is used.

The resulting surface can be tile red, linoleum brown, Nile green, French grey, Battleship grey, buff, black or white. All colors are permanent, and the finished floor has an *increased* tensile and compressive strength.

Where costs must be moderate but appearance is important, use COLORMIX without hesitation—indoors or out.

THE MASTER BUILDERS COMPANY
CLEVELAND, OHIO
Sales Offices in Ninety Cities
Factories at Cleveland and Irvington, N. J.

MASTERBUILT FLOORS

Residence of G. F. Montgomery, Marietta, Ga., where Colormix was installed for the Terrace

Architect
S. D. Trowbridge
Atlanta, Ga.

Mt. Sinai Hospital, New York City, equipped with two Pfaudler Glass Lined Laundry Chutes. Architect, Arnold W. Brunner, New York City.

You have seen the above building in many advertisements in this magazine. That is because it is up-to-date. Included in its up-to-date equipment are two Pfaudler Glass Lined Laundry Chutes.

A labor-saver, and a mark of distinction, specify it in your next hospital or hotel.

THE PFAUDLER CO., Rochester, N. Y.

Makers of the Glass Lined Steel Laundry Chute

See our Catalogue in SWEET'S

Mail this coupon for new brochure.

A.F.
4-24

MEMO.

Send me your new brochure, "A Laundry Chute That Is Glass-Lined."

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Address ....

GLASS LINED Pfaudler LAUNDRY CHUTE

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ASBESTONE

Magnesia Flooring

In new work or the covering of old floors, the only need is a firm base to assure a highly pleasing result in appearance, color effects, great durability, elasticity and high intrinsic value.

Specially adapted to schools, churches, office buildings and apartments. Prices will be rendered upon receipt of specifications. All work is fully guaranteed.

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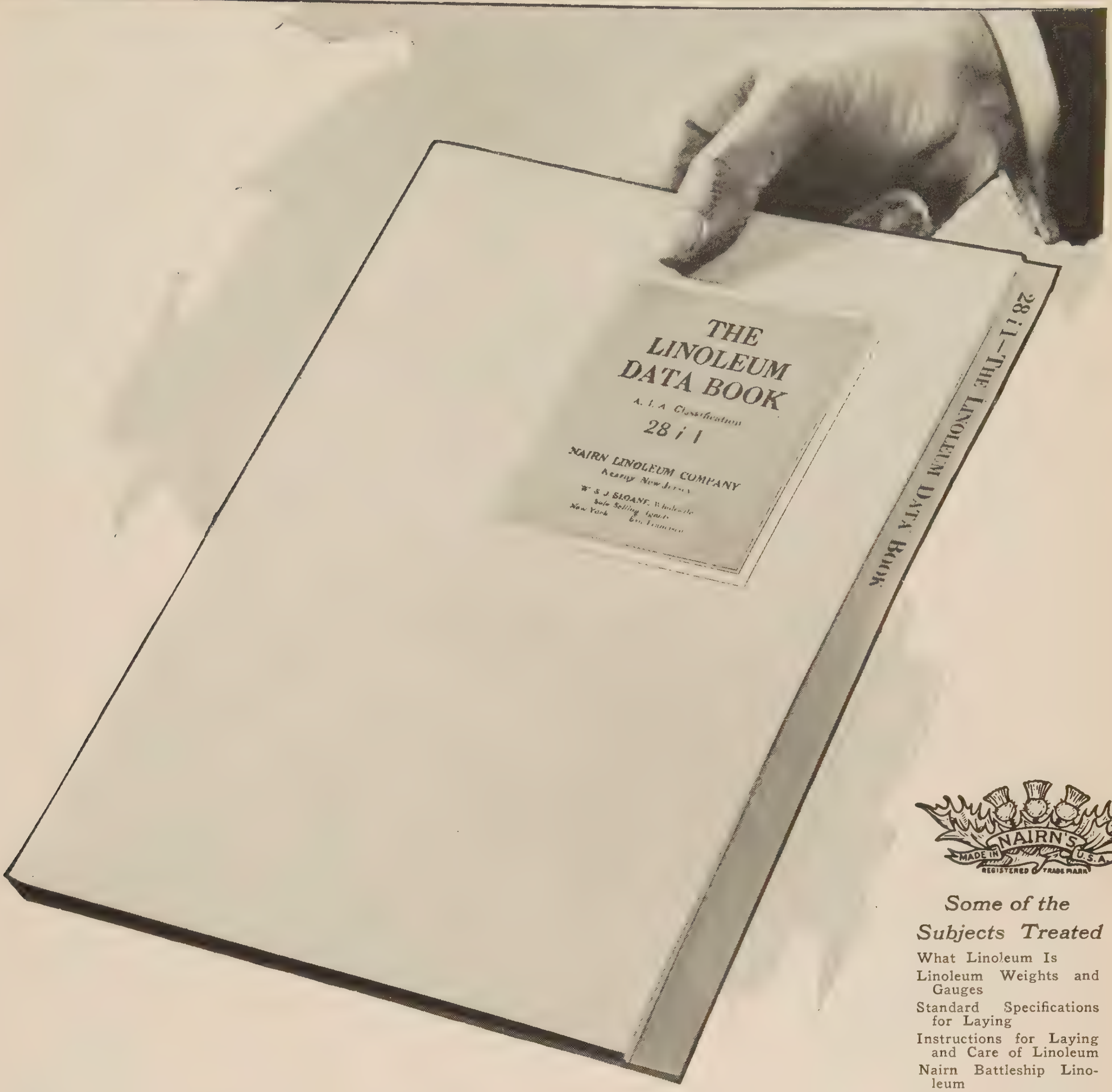

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Some of the Subjects Treated

- What Linoleum Is
- Linoleum Weights and Gauges
- Standard Specifications for Laying
- Instructions for Laying and Care of Linoleum
- Nairn Battleship Linoleum
- Plain Linoleum
- Tile Battleship Linoleum
- Lin Rhuber
- Nairn Cork Carpet
- Nairn Straight Line Inlaid Linoleum
- Granite, Moulded, Moire and Plank Linoleum
- Sample Patterns.

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This authoritative digest of linoleum information should be in every architect's files for ready reference.

The use of linoleum in nearly every type of building is increasing so rapidly that it is necessary to have at hand the facts about this artistic, long-lived and sanitary flooring.

This illustrated book gives these facts (see brief outline of Contents) in easily get-at-able form. And it is bound in a stout filing folder bearing the proper A. I. A. classification number.

If you have not received your copy of The Linoleum Data Book yet, we suggest you ask your secretary to write for it at once—or use the coupon. The edition is limited.

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202 Belgrove Drive, Kearny, New Jersey
W. & J. SLOANE, Wholesale; *Sole Distributing Agents*
NEW YORK SAN FRANCISCO

THE
NAIRN
LINOLEUM
COMPANY,
202 Belgrove Drive,
Kearny, N. J.

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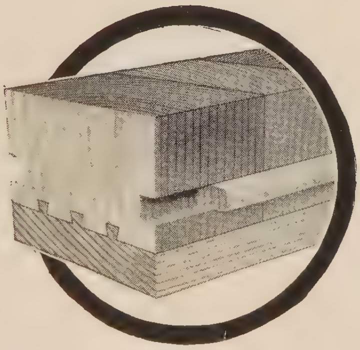
Smooth Floors Save Legs

In Weber Piano Co.'s Factory



Bloxonend (made of Southern Pine with the tough end grain up) comes in 8 ft. lengths ready to lay. Embedded sleepers unnecessary.

The Piano Assembly Department (shown above) in the Weber plant of the Aeolian Company, New York City, was originally floored with concrete. After a few years service, the concrete rutted to such an extent that it became necessary to actually carry pianos over rough spots in the floor to prevent broken legs and other damage to the expensive instruments.

The Aeolian Company, like hundreds of other nationally-known concerns, has solved a difficult problem by covering worn concrete floors with BLOXONEND. Because it *lays smooth* and *stays smooth*, top heavy loads on small casters are moved over a Bloxonend floor in less time, with less effort and without damage. And the comfortable resiliency afforded eliminates fatigue of workmen caused by cold, hard floors.

IF YOU SPECIFY BLOXONEND IN THE BEGINNING, YOUR CLIENT ONLY BUYS ONE FLOOR.

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BLOXONEND

Lays Smooth **FLOORING** *Stays Smooth*

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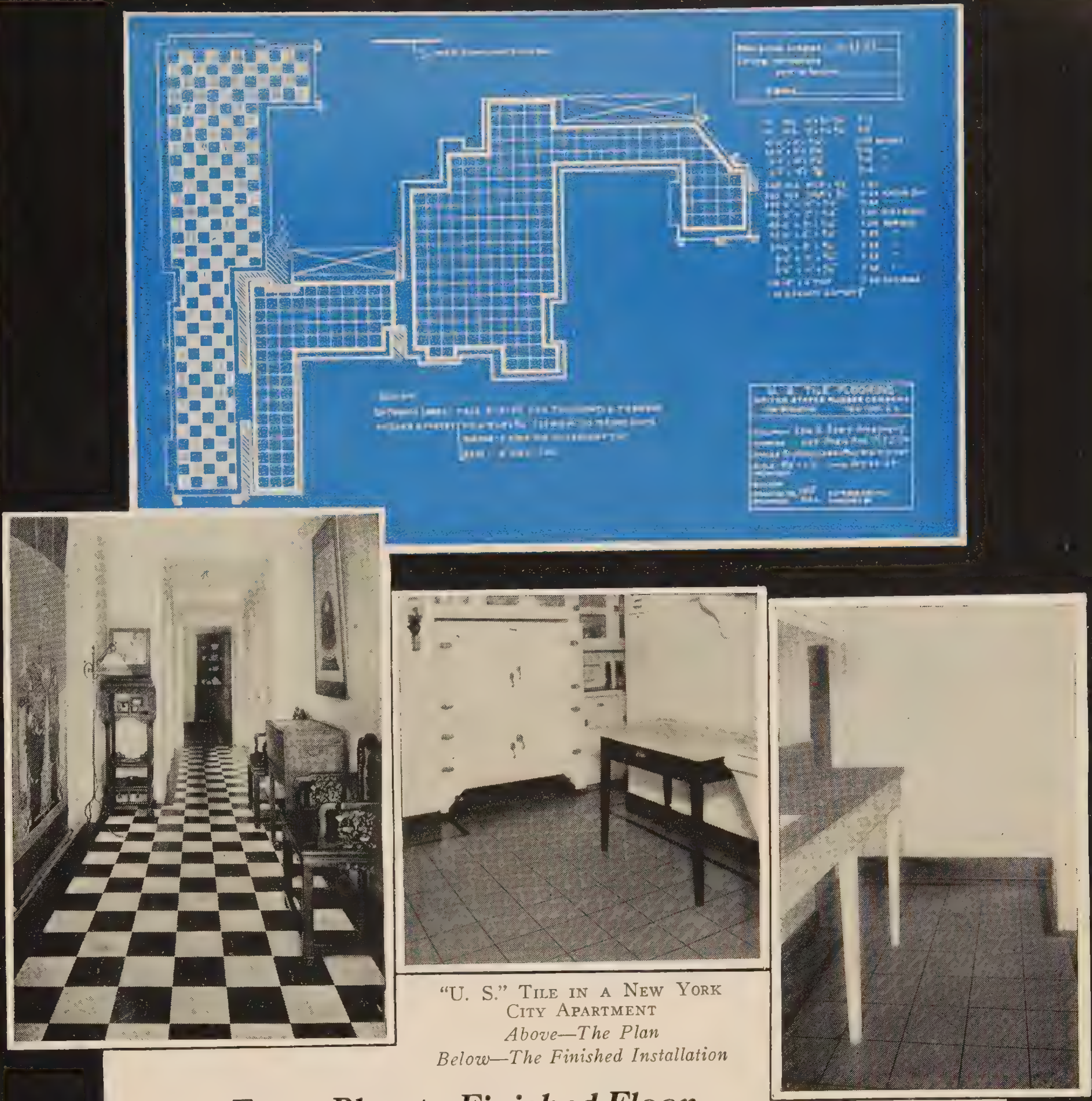
1900 Euclid Ave.

San Francisco
1007 Hobart Bldg.

Detroit, Mich.
2328 First National Bank Bldg.



"U. S." TILE IN A NEW YORK CITY APARTMENT
Above—The Plan
Below—The Finished Installation

From Plan to Finished Floor

YOUR client is assured maximum flooring service and satisfaction when you include "U. S." Tile in your specifications.

"U. S." Tile is the perfected result of nearly thirty years experience by the United States Rubber Company in the manufacture of rubber flooring. It has met with the enthusiastic endorsement of every architect who has investigated its possibilities.

May we send you full information and samples?

United States Rubber Company
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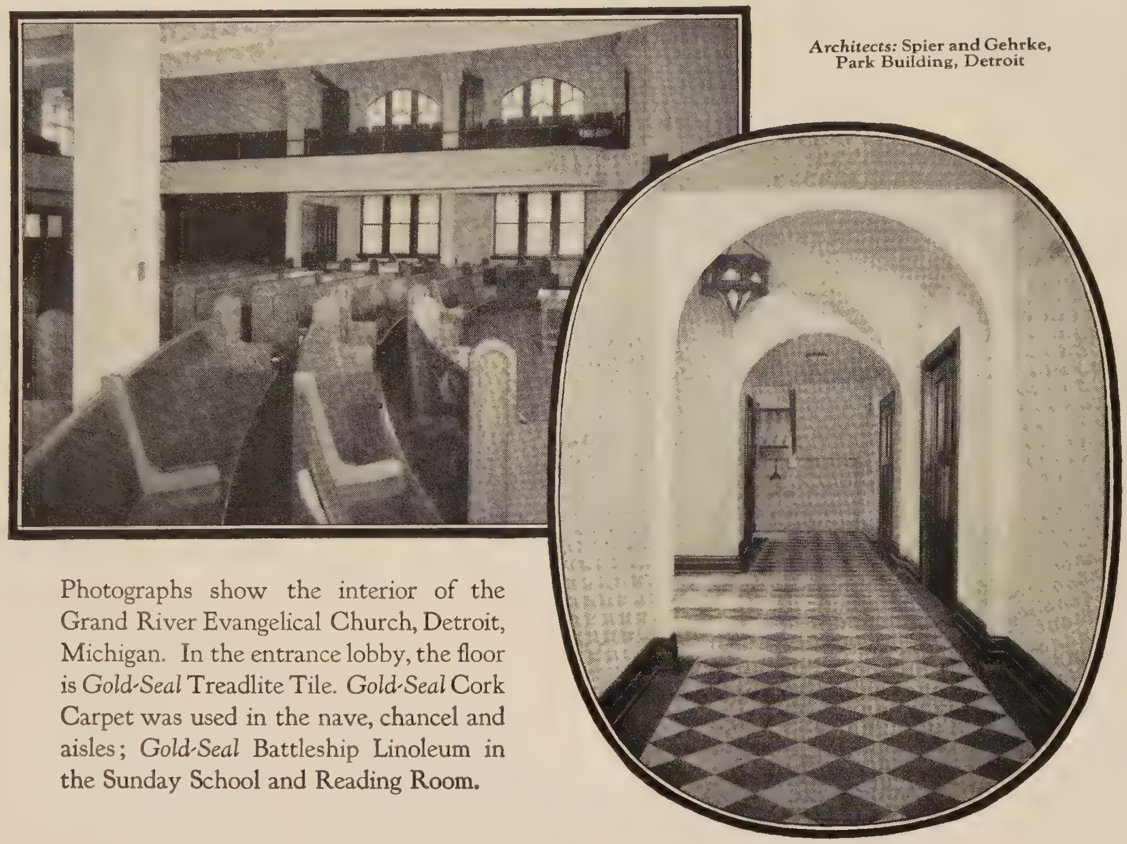
Trade Mark

"U.S." Tile Flooring



Architects: Spier and Gehrke,
Park Building, Detroit

Photographs show the interior of the Grand River Evangelical Church, Detroit, Michigan. In the entrance lobby, the floor is *Gold-Seal* Treadlite Tile. *Gold-Seal* Cork Carpet was used in the nave, chancel and aisles; *Gold-Seal* Battleship Linoleum in the Sunday School and Reading Room.

The Problem of Church Floors

The reverential stillness of worship must not be broken by the echoing tread of late arrivals or by unnecessary noise during the service. It is desirable, too, that the floor be warm and comfortable under foot. Other requirements, too numerous to list here, make the problem of church floors one of careful selection.

Bonded Floors offer a solution that fills all these requirements. In every type—*Gold-Seal* Battleship Linoleum, *Gold-Seal* Treadlite Tile, *Gold-Seal* Rubber Tile, *Gold-Seal* Cork Tile, and *Gold-Seal* Cork Carpet—these floors are absolutely noise-deadening, comfortable to kneel on, warm to the feet. And they have the added advantage of being appropriate and beautiful in color and pattern.

UNITED STATES FIDELITY & GUARANTY COMPANY
BONDED FLOORS COMPANY Inc
5-Year Guaranty Bond

The experience of our flooring engineers, the assistance of our designers, scientific installation of high grade materials, a nationwide organization, the safeguard of a Guaranty Bond—all of these are at your command.

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Main Office: 1421 Chestnut Street, Philadelphia, Pa.
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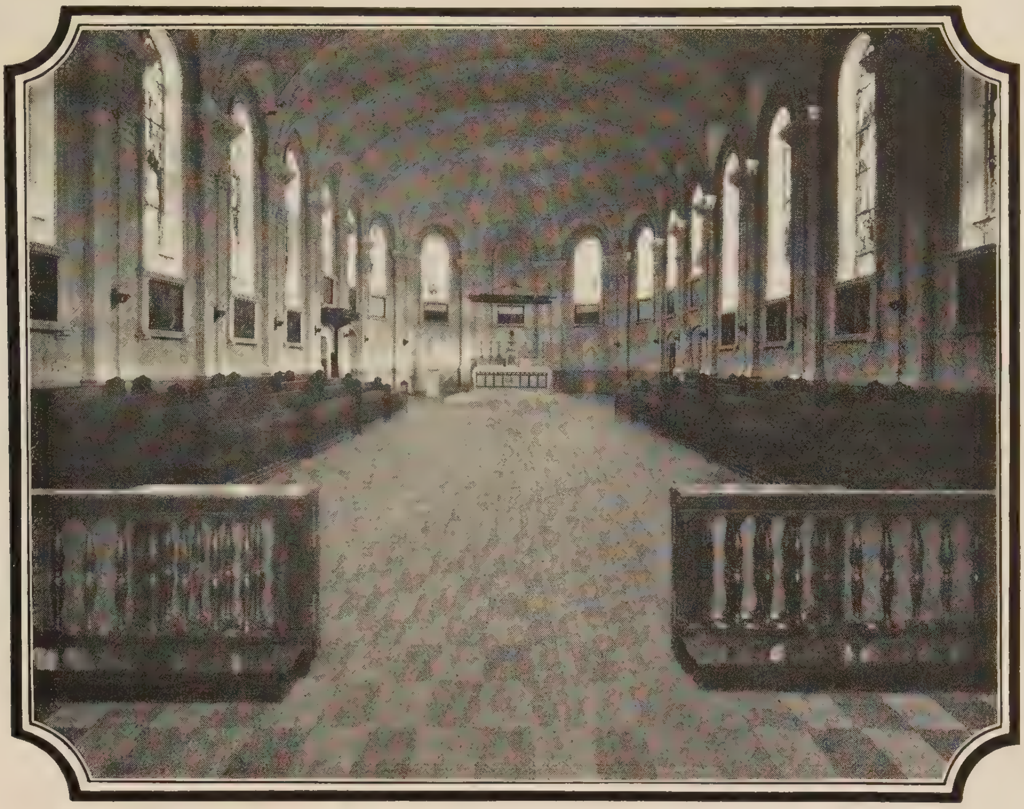


Alternate light and dark brown squares of Armstrong's Cork Tile set off this impressive interior of Mt. St. Mary's Theological Seminary, Norwood, Ohio. Messrs. King and Beck, of Cincinnati, O., were the architects.

A Dignified, Impressive and Quiet Floor

IT would be difficult to imagine a floor more thoroughly appropriate for the auditorium of church or chapel than Armstrong's Cork Tile. In the first place, it is a tile floor and hence susceptible of a considerable variety of treatment in color and design. The slightly mottled appearance of the surface and the three soft shades of brown in which the tiles are made produce an effect of richness and dignity in keeping with the spirit of the room and in harmony with its furnishings and decorative coloring.

Then, too, Armstrong's Cork Tile—which is pure cork shavings compressed, not a composition—is easy and resilient underfoot, warm and non-slippery. Not only is it almost entirely noiseless to the tread, but a floor of Armstrong's Cork Tile tends to subdue and absorb other sounds as well, and so to promote the quietness essential to attention and repose.

A non-absorbent, dustless, easy-to-clean floor, remarkably resistant to wear, Armstrong's Cork Tile can be kept in excellent condition with no more effort than such washing and scrubbing as may be needed. It will last for years without showing appreciable wear.

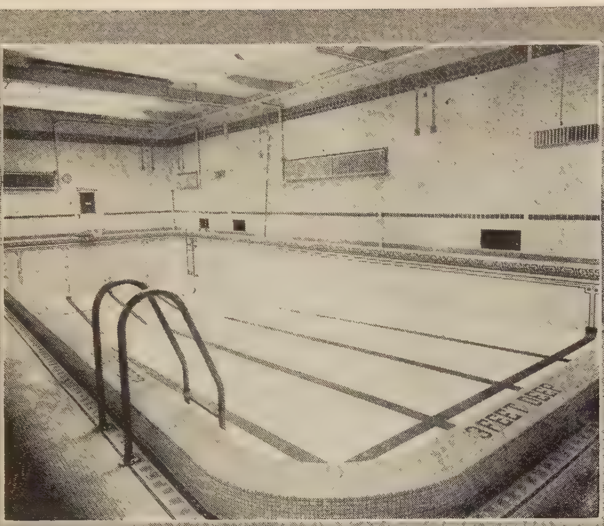
The 24-page book, "Armstrong's Cork Tile," gives a complete description and specifications. Write for your copy and sample tile.

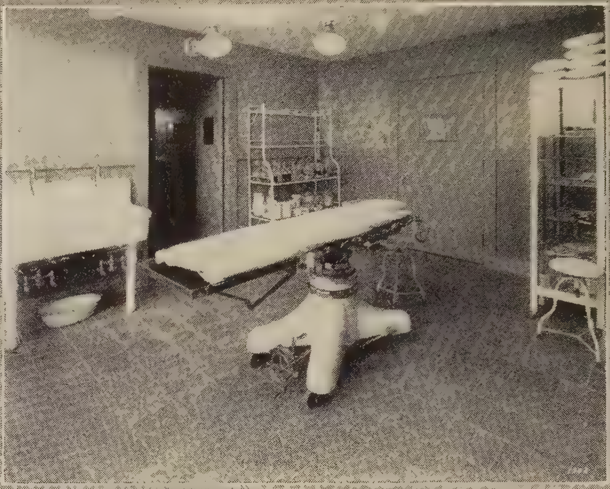
ARMSTRONG CORK & INSULATION CO., 132 Twenty-fourth Street, Pittsburgh, Pa.

Also manufacturers of Linotile Floors

ARMSTRONG'S CORK TILE

REGISTERED U.S. PAT. OFF.





NORTON FLOORS

USE ALUNDUM TILE AND TREADS WHEREVER THERE IS A SLIPPING HAZARD

THE first Norton Floor development was a tile consisting of Alundum abrasive grain and a vitrified clay bond. It is known as Alundum Tile. The toughest of all known abrasives gives this floor product longer life than any other floor material and a non-slip surface.

Then came other developments—vitrified Alundum Aggregates and marble chips using cement as the binding factor are combined to produce a great variety of color effects in both tiles and precast treads. Alundum Aggregate Tiles and Treads have found a place in the finest of modern buildings in association with the most beautiful marbles and other materials. They can be produced in color combination to match the surroundings.

Where the small mosaics are preferred the slipping hazard can be eliminated by the use of Alundum Ceramic Mosaics. They are finding their place around the swimming pool, under the shower bath, in the wash room and kitchen and at the building entrance and lobby.

There is a Norton Floor for every place where long life and a non-slip surface are essential.

NORTON COMPANY
WORCESTER, MASS.
NEW YORK CHICAGO DETROIT PHILADELPHIA
HAMILTON, ONTARIO

T 85

Terrazzo

THE FLOORING OF CENTURIES

"Suggesting a Standard Specification for Terrazzo Work"
By PASQUALE GALASSI

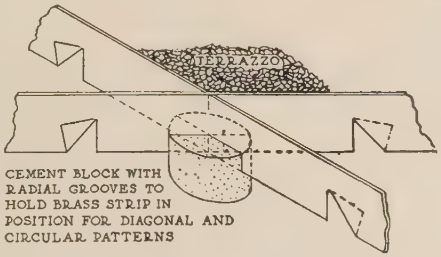
THIS BRIEF PRACTICAL TREATISE HAS BEEN PREPARED IN STANDARD FILING SIZE AND WILL BE SENT TO ANY ARCHITECT UPON REQUEST. COMPLETE REFERENCE AND SPECIFICATION DATA IS PRESENTED.

Preventing Cracks in Terrazzo Floors

THE cutting up of the surface into small squares or panels, to take care of any expansions or contraction, and the locating of the joints strategically so as to control the cracking directly above the strain of cross steel beams, will eliminate ragged and unsightly cracking.

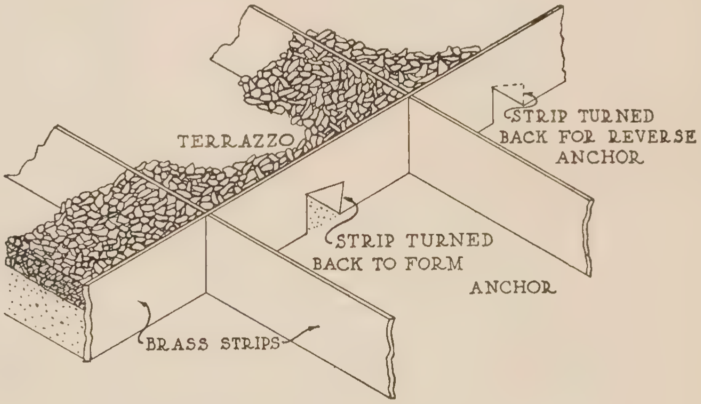
The most effective means thus far devised is the provision of brass or metal strips, which adds very little to the cost of installation. The strips provide straight line openings for eventual cracks and enable the architect to carry out any decorative scheme of floor in keeping with surroundings, impossible heretofore with terrazzo work on account of prohibitive cost in doing it by the old method.

Under our "Terrazzolay" method, the metal strips are deep enough to cut both the wearing surface and the underbed supporting it, thus dividing the pavement clear to the foundation slab, and rendering it independent of settlement movements. Rigidity is insured by special forms of anchorage as shown in details.


TERRAZZO
CEMENT BLOCK WITH RADIAL GROOVES TO HOLD BRASS STRIP IN POSITION FOR DIAGONAL AND CIRCULAR PATTERNS

INSURING ACCURACY OF PATTERNS

Estimates furnished on complete terrazzo, and tile installations anywhere.

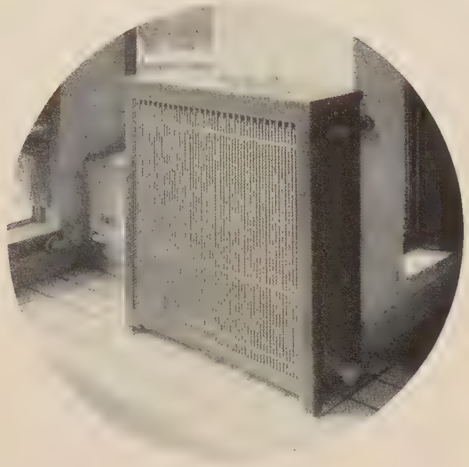

TERRAZZO
STRIP TURNED BACK FOR REVERSE ANCHOR
STRIP TURNED BACK TO FORM ANCHOR
BRASS STRIPS

GALASSI COMPANY

TERRAZZO AND TILEWORK OF EVERY DESCRIPTION

153 East 38th Street, NEW YORK

11 Bennett Street, BOSTON



A well planned interior must make provision for covering bare radiators—

TRICO ART METAL RADIATOR FURNITURE

Transforms unsightly space-wasting radiators into beautiful articles of furniture. Made of heavy gauge steel and finished in baked-on enamel to perfectly match any wood or color used in interior decoration. Every top contains a patented humidifier that moistens the hot air, an essential to health and comfort.

Made to order in any size and in three styles—Standard Shield, Cane Grille, Square Rod Grille (Illus.).

Write for Full Particulars and Booklet

ART METAL RADIATOR COVER CO.
2241 Oakdale Avenue, Chicago

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Overhead and Out of the Way

WILSON Rolling Steel Doors for industrial plants, railroad buildings, warehouses, piers, etc., have been the standard of quality and satisfactory service since 1876. They roll up overhead and out of the way, thus conserving valuable floor space. Operated by hand, gearing, or motor.

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Established 1876
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DOORS · PARTITIONS · BLINDS
WARDROBES
THE J.G.WILSON CORPORATION
NEW YORK CITY

The J. G. WILSON Corporation
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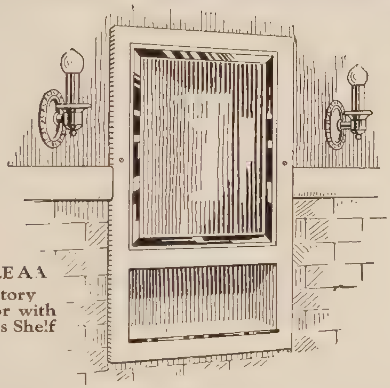

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HESS CHICAGO

STYLE AA
Lavatory
Mirror with
Recess Shelf

Beauty That Endures

LAVATORY Mirrors and Medicine Cabinets, with everlasting, snow-white steel frames and beveled plate glass mirrors are always clean, sanitary, durable, and beautiful—although they cost practically no more to install than those of inferior construction. The complete line of Hess Medicine Cabinets and Lavatory Mirrors offers architects and builders attractive styles in a number of sizes, carefully adapted to individual requirements.

See Sweet's Index; or write for illustrated 1216 "Cabinet and Mirror" catalogue

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Makers of HESS *Welded Steel* FURNACES
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Snow-White Steel

Stewarts IRON FENCE

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Our distinctive designs harmonize with the lines of the building, whether it is a town house, suburban home, country estate, bungalow or other property.

Book of Designs "B" sent upon request

We also manufacture grilles, balconies, partition railings, folding gates and miscellaneous iron and wire work and chain link wire fence.

Architects' Designs carefully executed in strict accordance with their specifications

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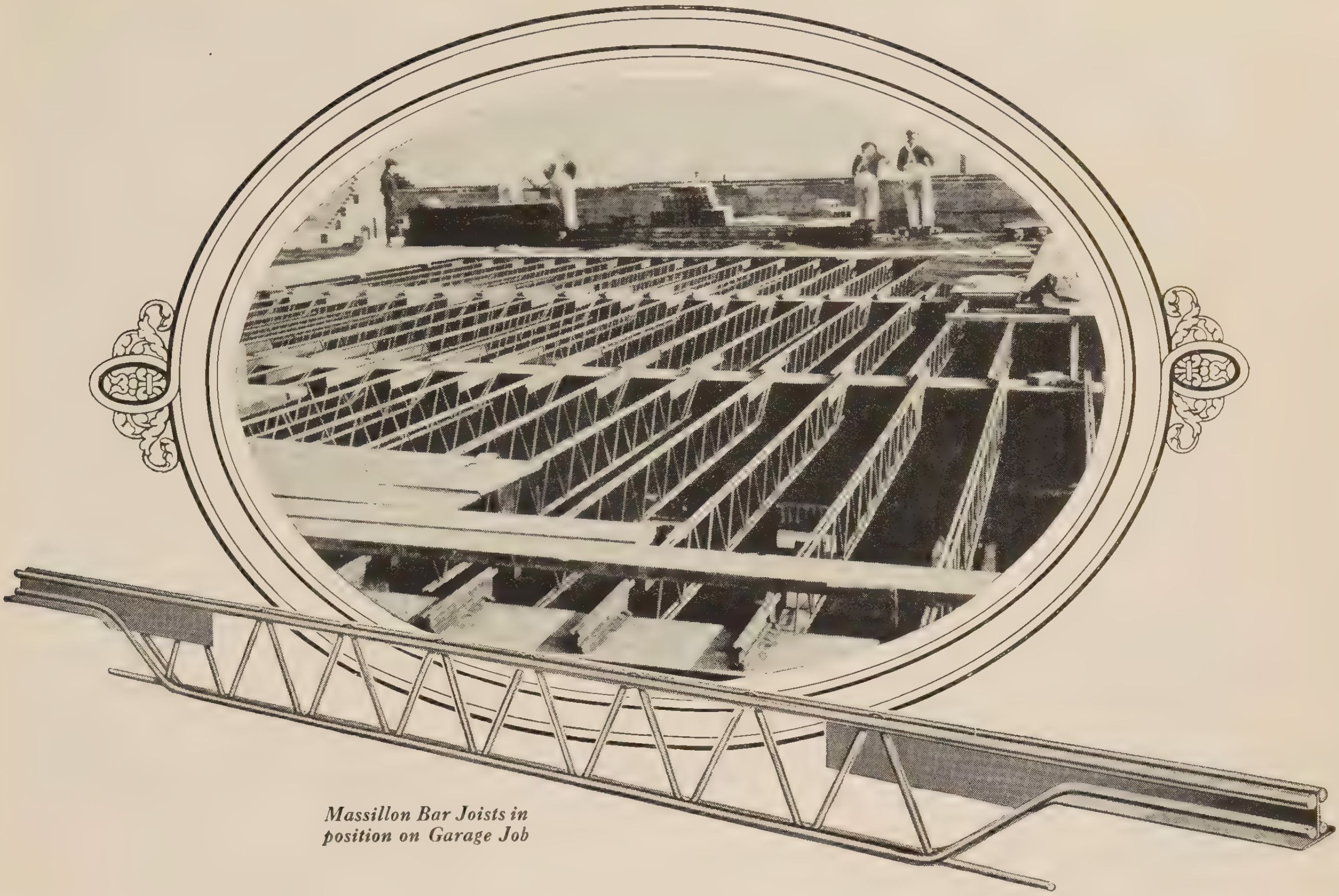

Massillon Bar Joists in position on Garage Job

Use Bar Joists for Garage Floors and Roof

Garages often house property valued at half a million dollars. Along with this valuable property are stored hundreds of gallons of highly inflammable fuels and oils. Consequently fire safety is of utmost importance in garage design.

For garage floor construction specify Massillon Bar Joists. You will be impressed with their scientific bridge-like design and the fact that from 20 standard sizes you can select joists to meet every span requirement. No cutting is necessary except where joists extend into outside walls far enough to interfere with face brick.

Unequalled opportunity is afforded for the efficient, economical installation of piping and conduits. The joists are light in weight, rugged, easily handled and sustain the imposed loads with absolute certainty.

Massillon Bar Joists are sold by thoroughly reliable concerns located in all principal centers. Write us for complete information and safe loading tables.

The Massillon Steel Joist Company
Massillon, Ohio

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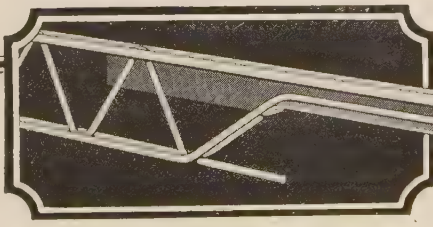
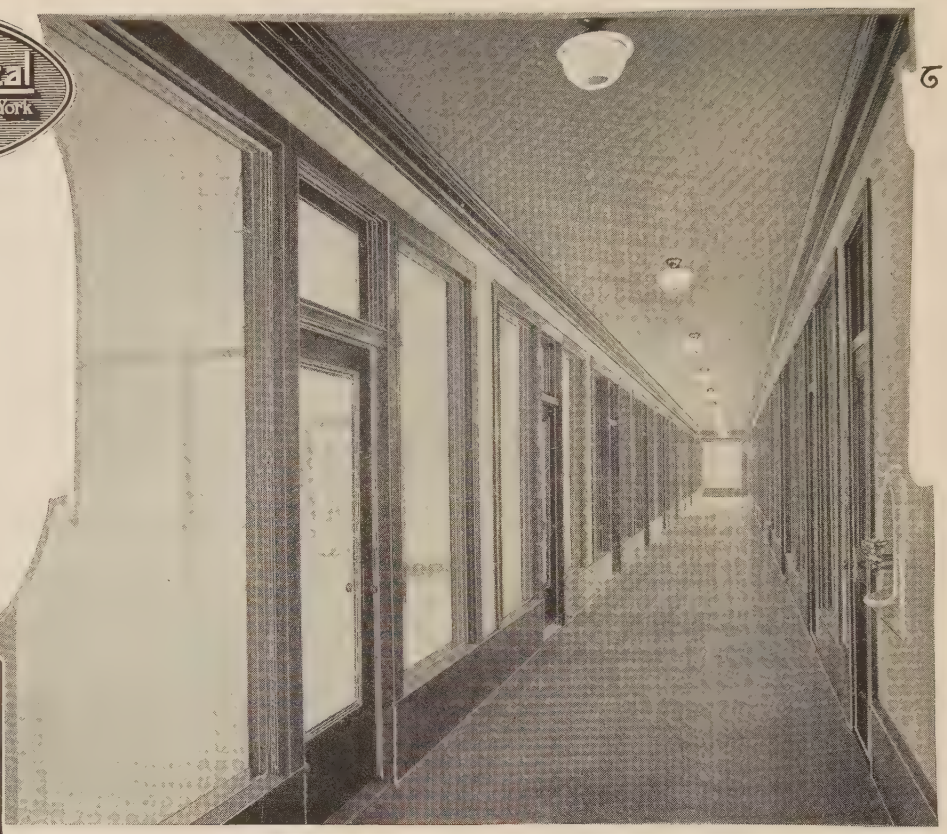
BAR JOISTS



Art Metal
Jamestown, New York
U·S·A



Corridors of Hollow Metal and Glass by Art Metal, Jackson Building, Buffalo, New York

◆

Bly & Lyman
Architects and Builders

Doorway by Art Metal in the Jackson Building, Buffalo, New York

An Interesting Handling of Hollow Metal and Glass

THIS corridor in the Jackson Building, Buffalo, presents an interesting departure from the usual in its large areas of glass encased in Art Metal hollow steel trim. The architects and builders found Art Metal facilities and craftsmanship highly desirable and used them to good advantage in carrying out this project.

The scope of Art Metal service in supplying hollow metal doors, trim and partition, ranges from a few doors on one job to two thousand on another; from a few feet of steel partition to two miles of it installed on one contract.

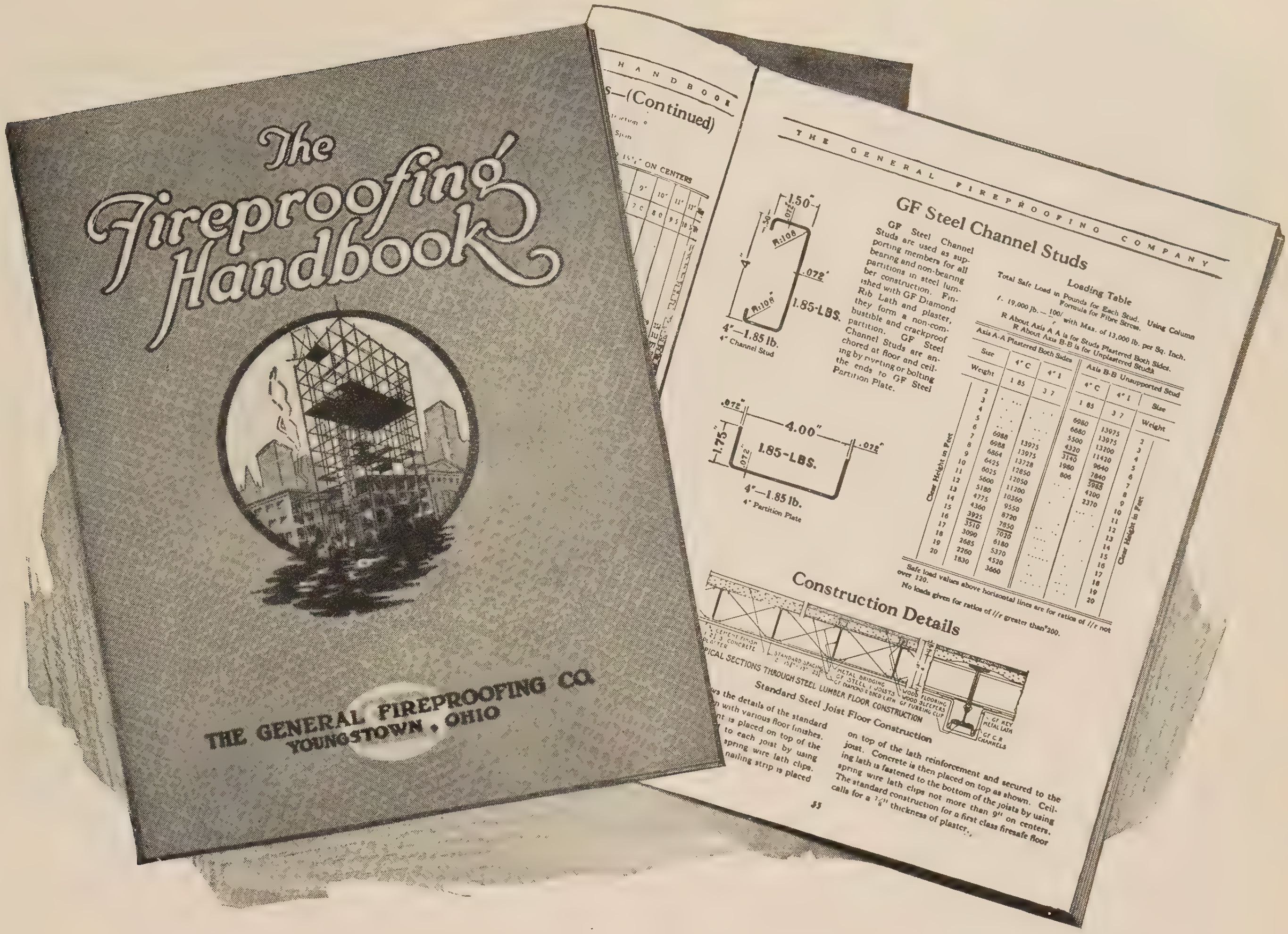
An examination of any Art Metal installation is convincing evidence that the exacting standards of Art Metal quality extend from the drawing board to the last detail of construction and finish.

Get Art Metal estimates and sketches on your next project.

Art Metal

JAMESTOWN, NEW YORK

Steel and Bronze Equipment for Banks Steel Office Equipment, Safes and Files
Hollow Metal Doors and Trim



The Fireproofing Handbook

THE GENERAL FIREPROOFING CO.
YOUNGSTOWN, OHIO

HANDBOOK

—(Continued)

THE GENERAL FIREPROOFING COMPANY

GF Steel Channel Studs

GF Steel Channel Studs are used as supporting members for all bearing and non-bearing partitions in steel lumber construction. Finished with GF Diamond Rib Lath and plaster, they form a non-combustible and crackproof partition. GF Steel Channel Studs are anchored at floor and ceiling by riveting or bolting the ends to GF Steel Partition Plate.

4"—1.85 lb.
4" Channel Stud

4"—1.85 lb.
4" Partition Plate

Loading Table

Total Safe Load in Pounds for Each Stud. Using Column Formula for Fibre Stress.

f. 19,000 lb. — 100 l/r with Max. of 13,000 lb. per Sq. Inch.

R About Axis A-A is for Studs Plastered Both Sides.
R About Axis B-B is for Unplastered Studs.

	Axis A-A Plastered Both Sides		Axis B-B Unsupported Stud		
Size	4" C	4" I	4" C	4" I	Size
Weight	1.85	3.7	1.85	3.7	Weight
2	....	....	6980	13975	2
3	....	....	6680	13975	3
4	....	....	5500	13200	4
5	....	....	4320	11420	5
6	6988	13975	3140	9640	6
7	6988	13975	1980	7840	7
8	6864	13728	806	5988	8
9	6425	12850	....	4200	9
10	6025	12050	....	2370	10
11	5600	11200	....	....	11
12	5180	10360	....	....	12
13	4775	9550	....	....	13
14	4360	8720	....	....	14
15	3925	7850	....	....	15
16	3510	7020	....	....	16
17	3090	6180	....	....	17
18	2685	5370	....	....	18
19	2260	4520	....	....	19
20	1830	3660	....	....	20

Clear Height in Feet

Safe load values above horizontal lines are for ratios of l/r not over 120.
No loads given for ratios of l/r greater than 200.

Construction Details

TYPICAL SECTIONS THROUGH STEEL LUMBER FLOOR CONSTRUCTION

Standard Steel Joist Floor Construction

…s the details of the standard …n with various floor finishes. …nt is placed on top of the … to each joist by using …spring wire lath clips. …nailing strip is placed on top of the lath reinforcement and secured to the joist. Concrete is then placed on top as shown. Ceiling lath is fastened to the bottom of the joists by using spring wire lath clips not more than 9" on centers. The standard construction for a first class firesafe floor calls for a 7/8" thickness of plaster.

55

Packed With Data of Daily Value

Here is a handbook filled with practical working data on all phases of modern fireproof construction, arranged in convenient, usable form.

The field covered includes the most advanced types of fireproof floors, roofs, ceilings, partitions, steps, stairs, seat-risers, beams, columns, tanks, etc.

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The "Fireproofing Handbook" was first issued in 1912. It is now in its eighth edition.

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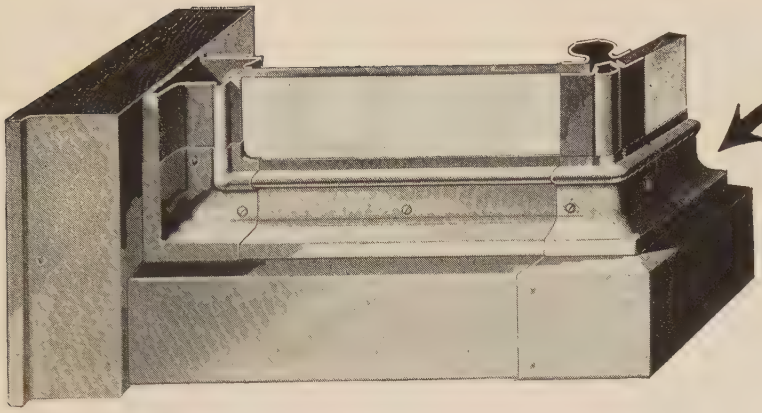


Kawneer
SOLID COPPER
STORE FRONTS

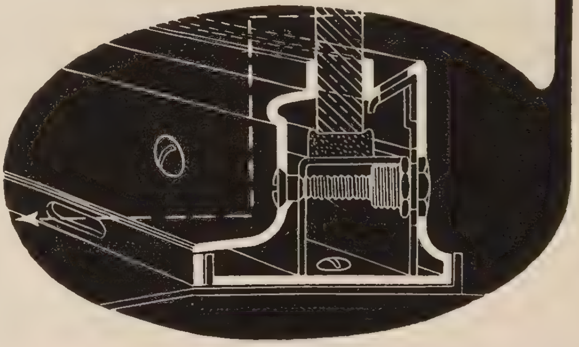
What Kawneer Resiliency Means to the Architect

Plate glass vibrates much like a tuning fork. Sudden wind pressure causes it to bow. Kawneer Resilient Spring Grip Store Front Construction provides the necessary give-and-take to allow for this vibration and bending without danger of fracturing the glass.

Kawneer Solid Copper Store Fronts were invented by a successful architect to meet the requirements of his work on business buildings. Thousands of Kawneer installations to be found on the busiest streets of the nation are daily proving the value of this principle of resiliency to architects who demand the fullest service for their clients.

Catalog "L" and a set of full size details, in convenient size for filing, will be mailed to architects upon request.

The small sketch below shows how the resilient spring grip of Kawneer sash and bars extends from the adjustment screw upward. This long spring deflection permits the plate glass to rock upon its own base when it bows under wind pressure. This give-and-take spring grip permits vibration waves to pass out and through the edges of the glass as nature intended they should.



1620 Front Street **THE Kawneer COMPANY** Niles, Michigan

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(An actual experience)

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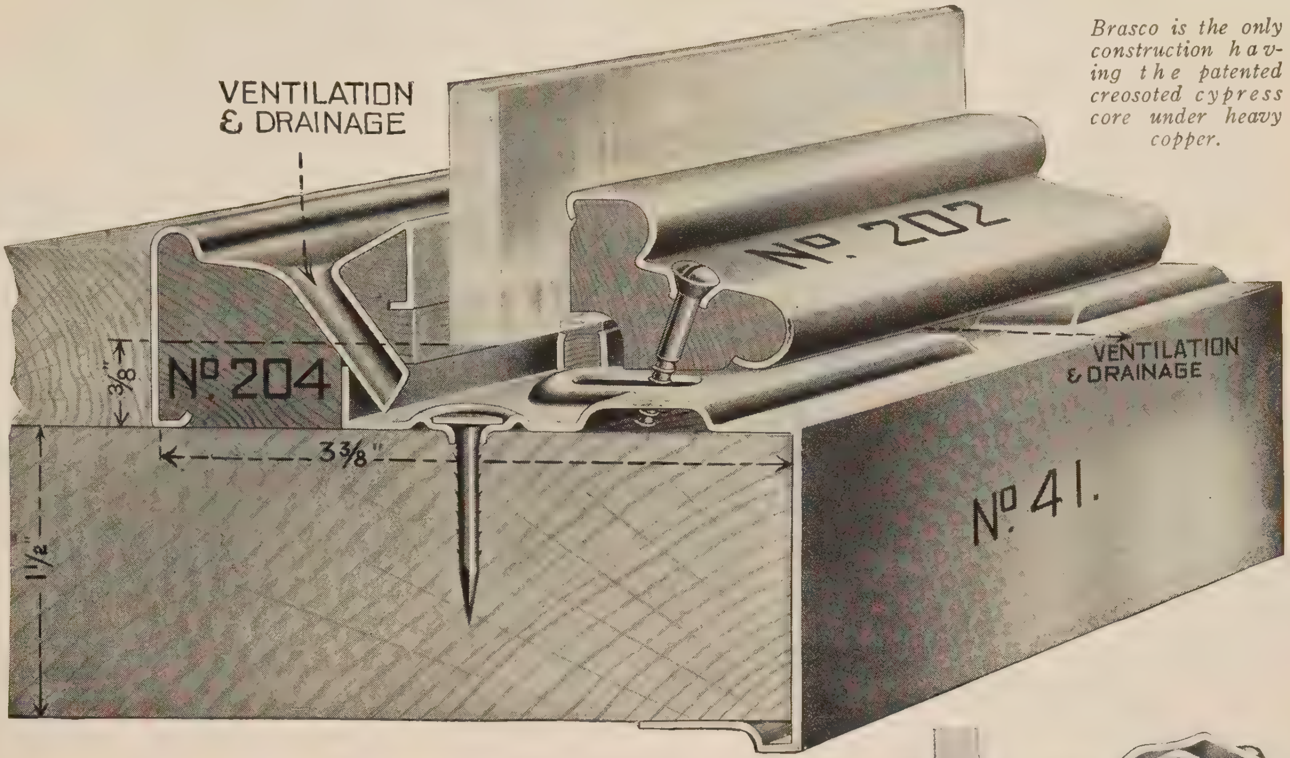

THE PERFECTLY DESIGNED SILL

THIS sectional view of Brasco sill construction is reproduced here that architects and engineers may quickly see that the Brasco sill is justly called "a perfect design."

Note the wide gutter, the generous drainage and ventilation facilities, the sturdy setting, beauty of the design, the indirect screw pressure and the perfect sill protection.

Great strength and glass safety are doubly assured by the patented creosoted wood core, covered by heavy gauged copper—an outstanding advantage found only in Brasco.

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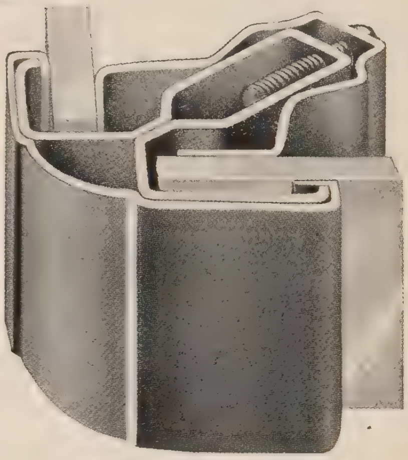
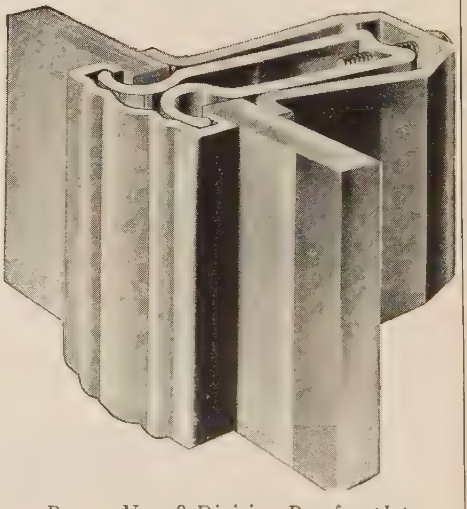


The Brasco No. 8 Corner Bar holds the largest plates of glass firmly without danger of breakage.



Brasco No. 18 Division Bar for plates longer than 110 in. The continuous steel reinforcement is drawn from a specially milled material.

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"Put in Zouri Windows
Don't Take Chances

—and believe me, I know. I've had several windows crash because of excessive vibration and distortion due to improper settings. It has cost me real money, not only for replacements but in damages to goods on display in my windows. Then there's the time lost in waiting for new windows, the break in interest on the part of the passing crowd and the consequent loss in business. Don't take chances, put in Zouri Safety Metal Store Fronts and you'll save a world of grief."

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prevent glass breakage during installation or from distortion after the glass is installed.

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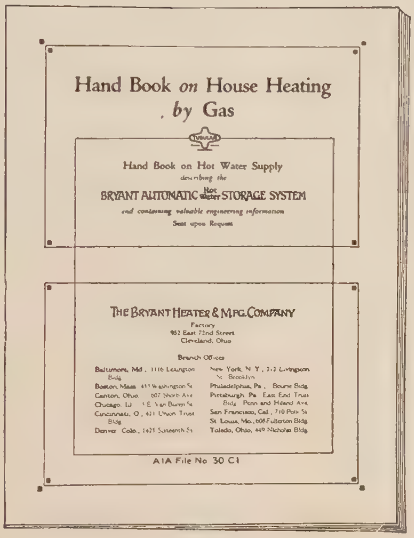

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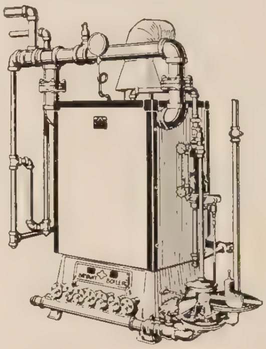

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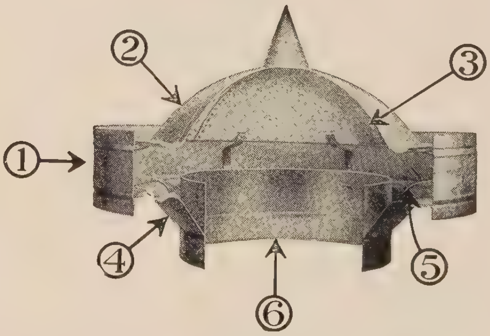

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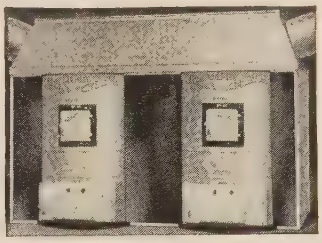

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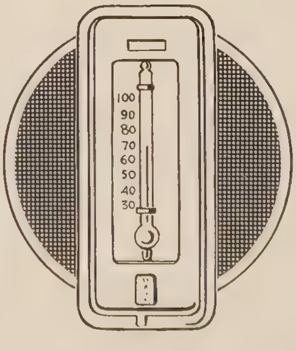
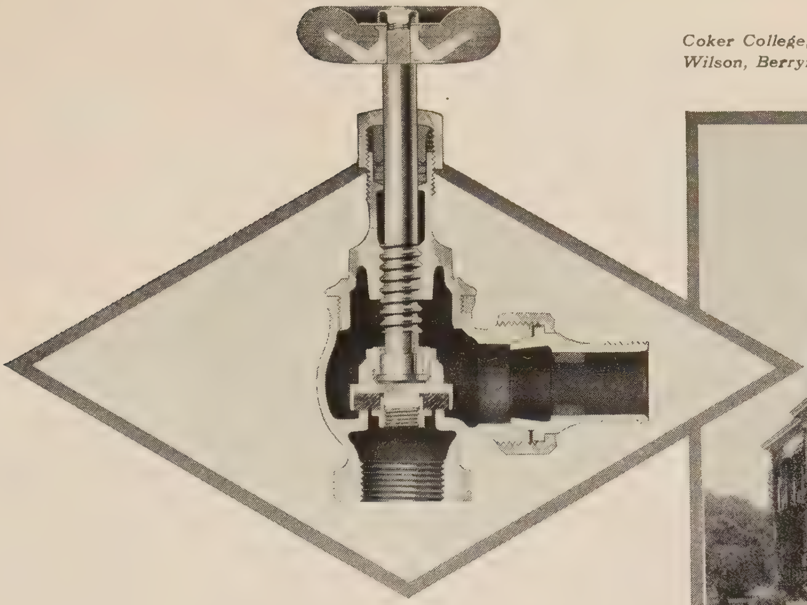
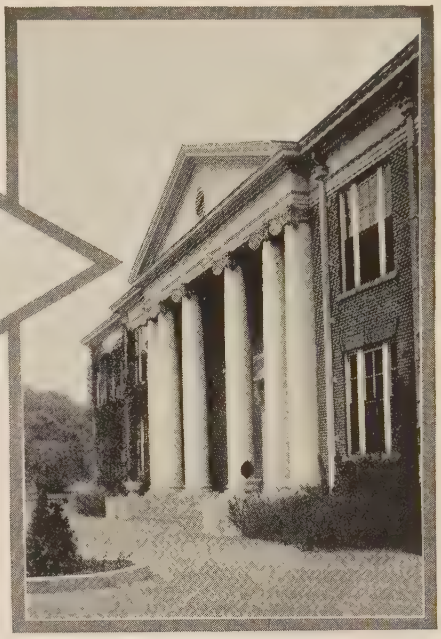




Sectional view, Fig. 168, Jenkins radiator angle valve with wood wheel and male union.

Coker College, Hartsville, S. C.
Wilson, Berryman & Kennedy, Columbia, S. C.
Architects



Jenkins radiator valves,—a logical choice

Wilson, Berryman & Kennedy, architects, in keeping with a policy to provide a thoroughly modern building, have specified only the best equipment throughout Coker College. Jenkins radiator valves are used in the heating system.

And Jenkins valves are a logical choice, too. They embody simplicity in design, convenience of operation, and serviceability under all conditions of use. They have a recognized reputation for long life.

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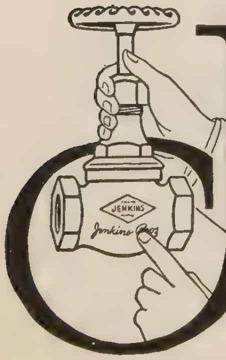

Always marked with the "Diamond"

Jenkins Valves

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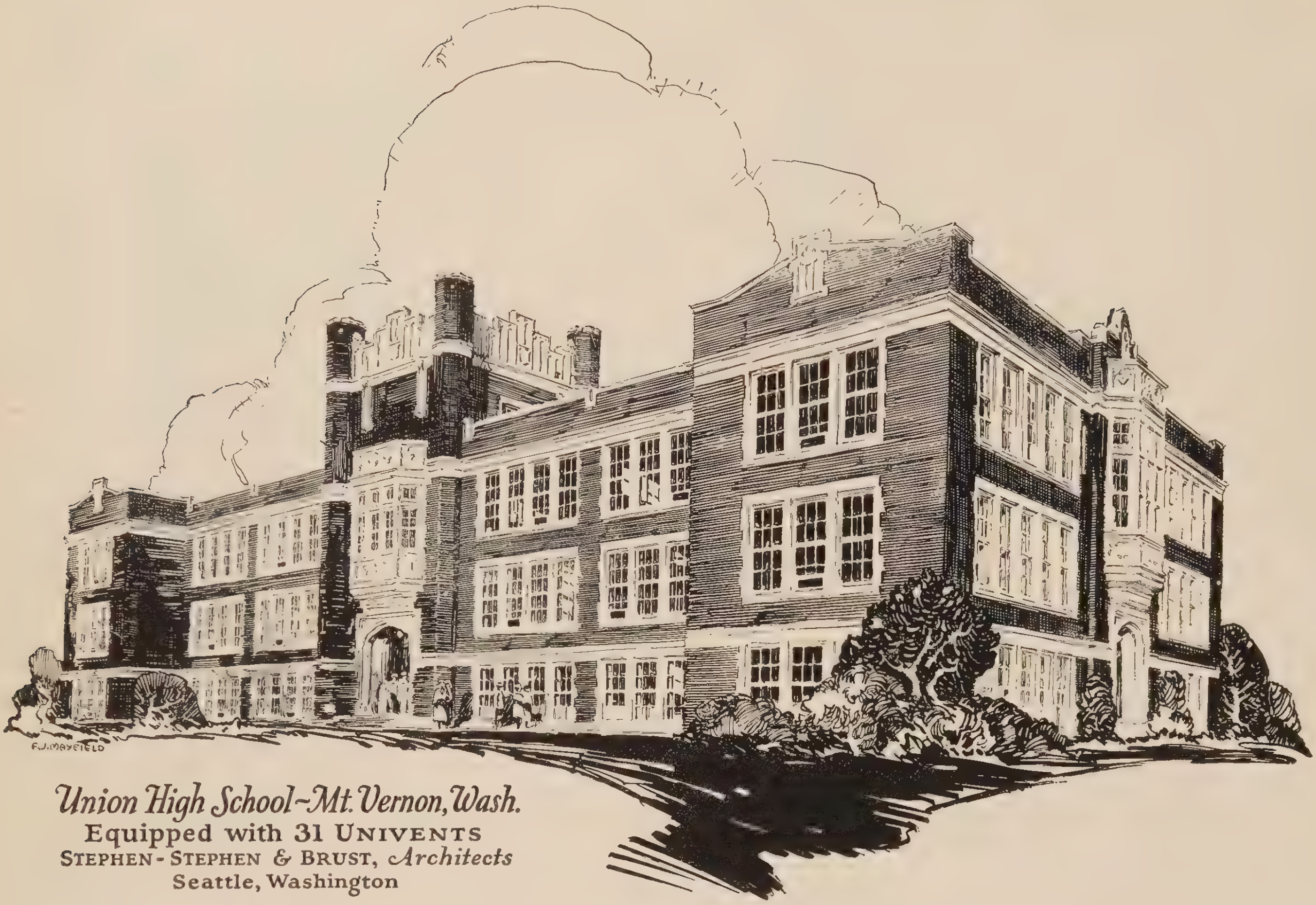

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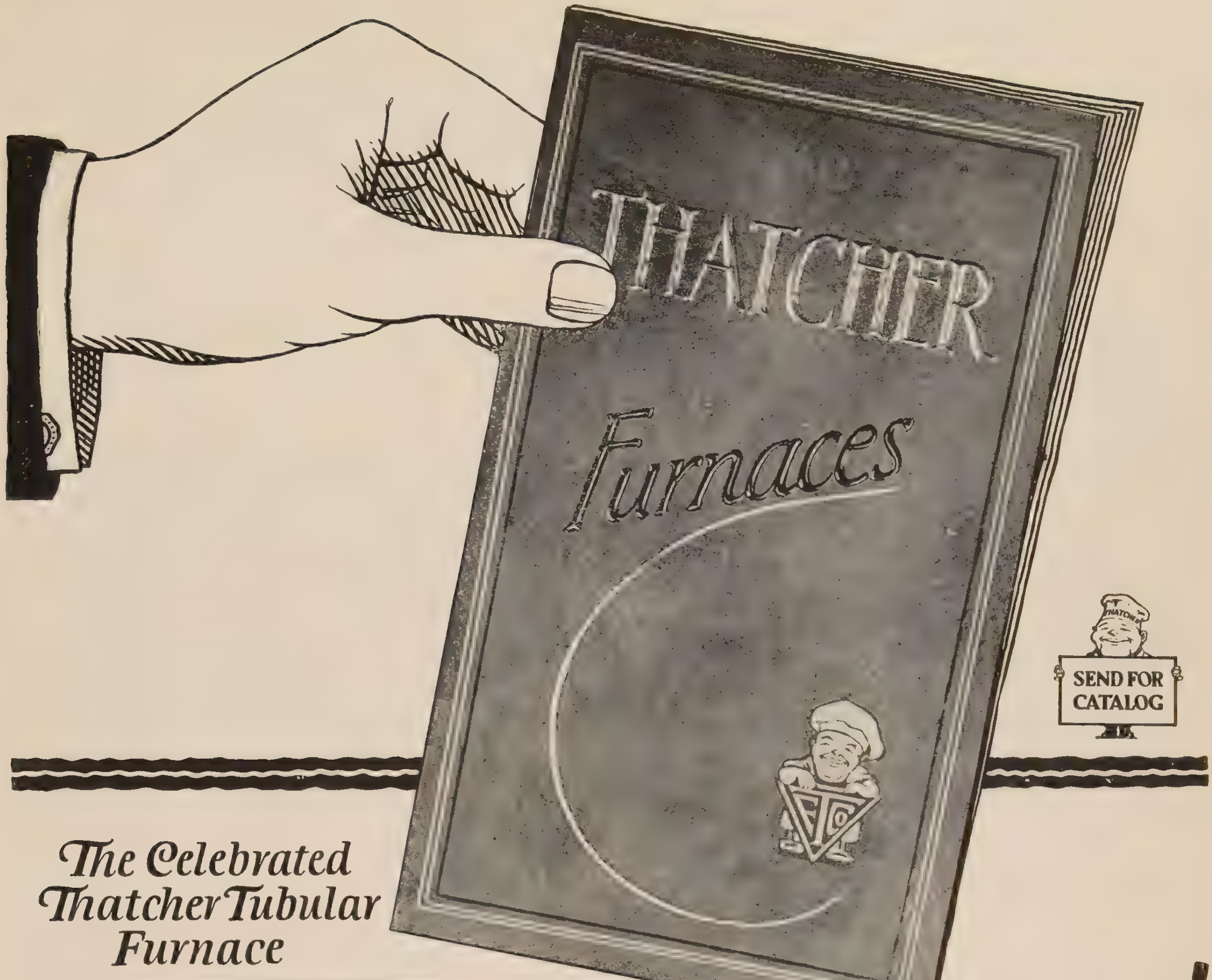

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SUPER-SMOKELESS Boilers are extremely economical with fuel. They also respond readily whenever rapid heating service is required. Our Church Heating Bulletin illustrates and lists many important installations.

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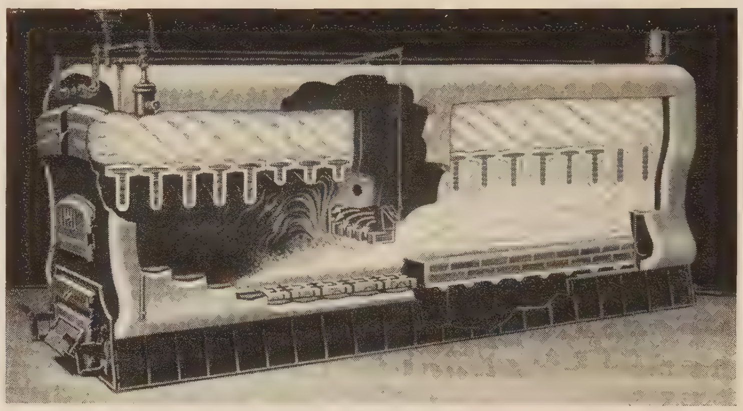

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Every room will be just the right temperature.

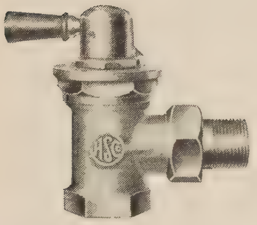
There will be no air-bound stubborn radiators.

Heat comfort can be made sure in exposed or remote rooms.

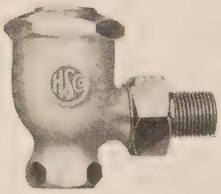
There will be a great saving in coal or other fuel.

It is flexible heat quickly adaptable to outside changes.

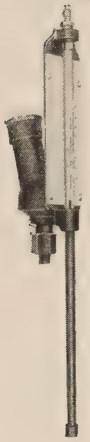
The six Hoffman Devices that change an ordinary steam heating system into "Controlled Heat" are:



The Hoffman Modulating Valve. The chief feature of this valve is the easy and accurate setting of the valve port to fit radiators of various sizes. By means of the precise port adjustment coupled with the sensitive damper regulation the amount of steam admitted to the radiator may be accurately controlled and the amount of heat given off by each radiator regulated. There is no valve of its type on the market that possesses these exclusive Hoffman features.



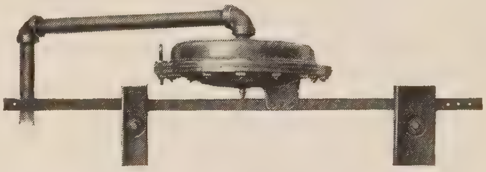
The Hoffman Return Line Valve. This valve is automatic, non-adjustable, thermostatic and relieves all air and condensation without loss of steam. In service, it is efficient in operation with the same degree of sensitiveness under either high or low pressure. The valve operates under a pressure range from 13 inches of vacuum to 50 lbs. steam pressure.



Hoffman Mercury Pressure Gauge. This gauge shows an exact reading in ounces of the pressure conditions.

Hoffman Vapor Vacuum Valve. This valve not only freely vents all air in the system but also prevents its return.

Hoffman Differential Loop. This device maintains a constant water level in the boiler and thus prevents the danger of a burned out or cracked section. It also instantly enables steam to enter a radiator when the modulating valve is opened by maintaining a constant pressure differential between the feed and return ends of radiators.



Hoffman Damper Regulator. This damper control is entirely automatic and when once set at desired pressure, requires no further attention. It accelerates or retards the amount of fire and conserves fuel.

HOFFMAN "Controlled Heat" is an improved type of heating but it is in no sense experimental. It is in successful operation in such big jobs as The Textile Building, where total radiation is approximately 75,000 feet, and in many small dwellings where only a few hundred feet were required.

Hoffman "Controlled Heat" is a type of heating that gives universal satisfaction and the first cost is not excessive.

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Behind that trademark is thirty years of manufacturing experience. And behind each boiler is the broadest written guarantee in the heating field.

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Equipped with Higgin All-Metal
Window Screens

A suggestion on window detail—

Proper treatment of window detail so affects architectural style that it is not surprising that the architect is highly critical of the window screens to be installed.

That he insists on Higgin All-Metal Screens in his specifications is simply thoughtful protection of the ultimate beauty of the completed building. The narrow enameled metal frames are entirely unobtrusive whether viewed from within or without. They do not interfere with the subtle effects of high light and shadow the architect strives to hold in his exterior detail.

And particularly in the solarium, heavy wooden screens are out of place. Note the sense of airy openness in the solarium interior above—an example of Higgin Screening.

A Higgin service man will come to your office at your call and discuss with you how Higgin fitters and Higgin co-operation can assist you by improving the screening of the homes and buildings you are now erecting.

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Manufacturers of Higgin All-Metal Weatherstrips and Higgin All-Metal Screens

Look in your telephone or city directory for the address of your local Higgin Service Office, or write to the home office direct.

Left: Church of the Blessed Sacrament. Gustav A. Steinbach, Architect

Right: Church of St. Vincent Ferrer. Bertram G. Goodhue, Architect

For specifications and scale drawings of all models see Sweet's pp 2199—2207

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use G&G Telescopic Hoist equipment for ash removal

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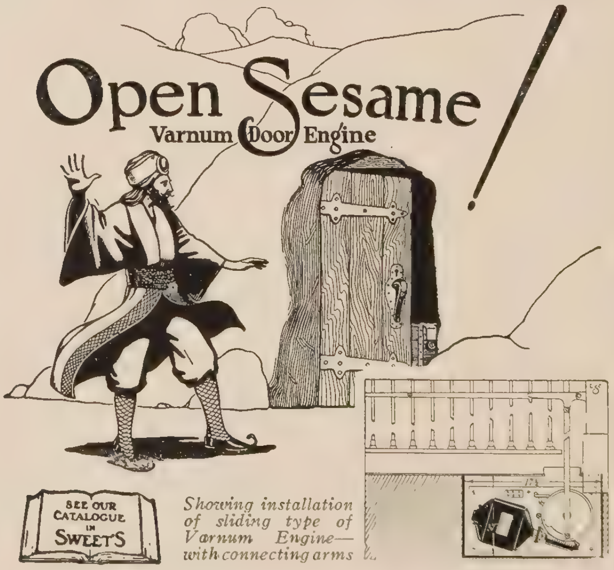
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In a radio factory, the dust will interfere with the proper manufacture of delicate parts. It is objectionable in food product and packing houses, in textile mills and print shops, in candy factories, in varnish finishing rooms, and in hundreds of other places.

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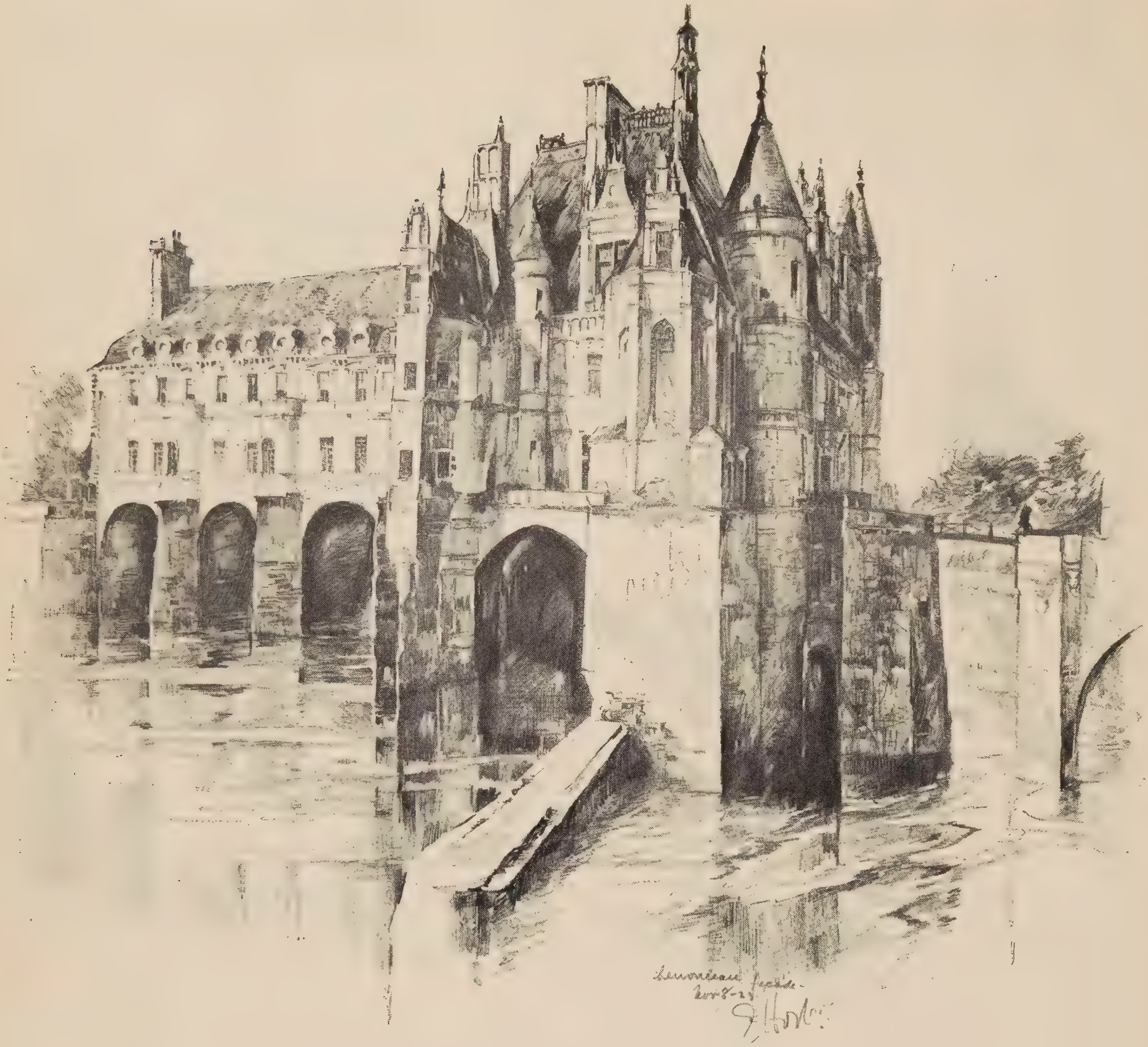

THIS pencil drawing of the chateau of Chenonceaux, on the river Cher, in central France, is one of the most charming renderings Earl Horter has ever made. Ten pages of manuscript could bear no more eloquent testimony to the quick responsiveness and superlative quality of

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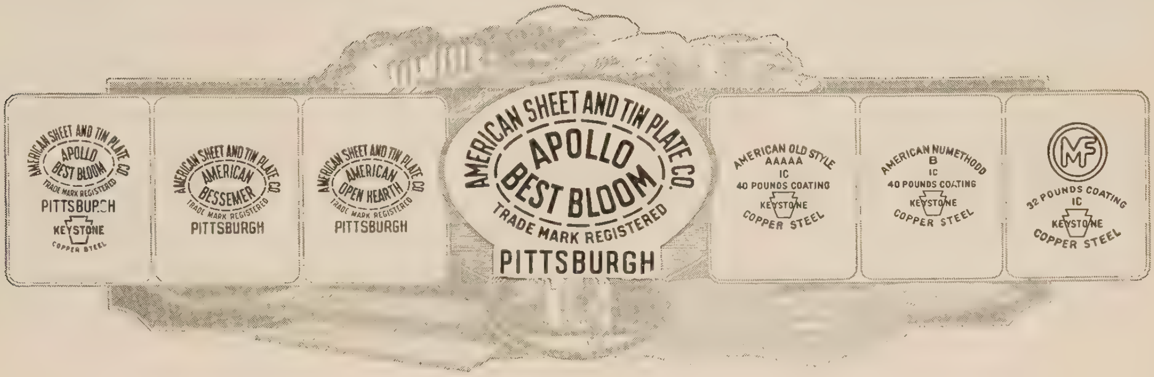
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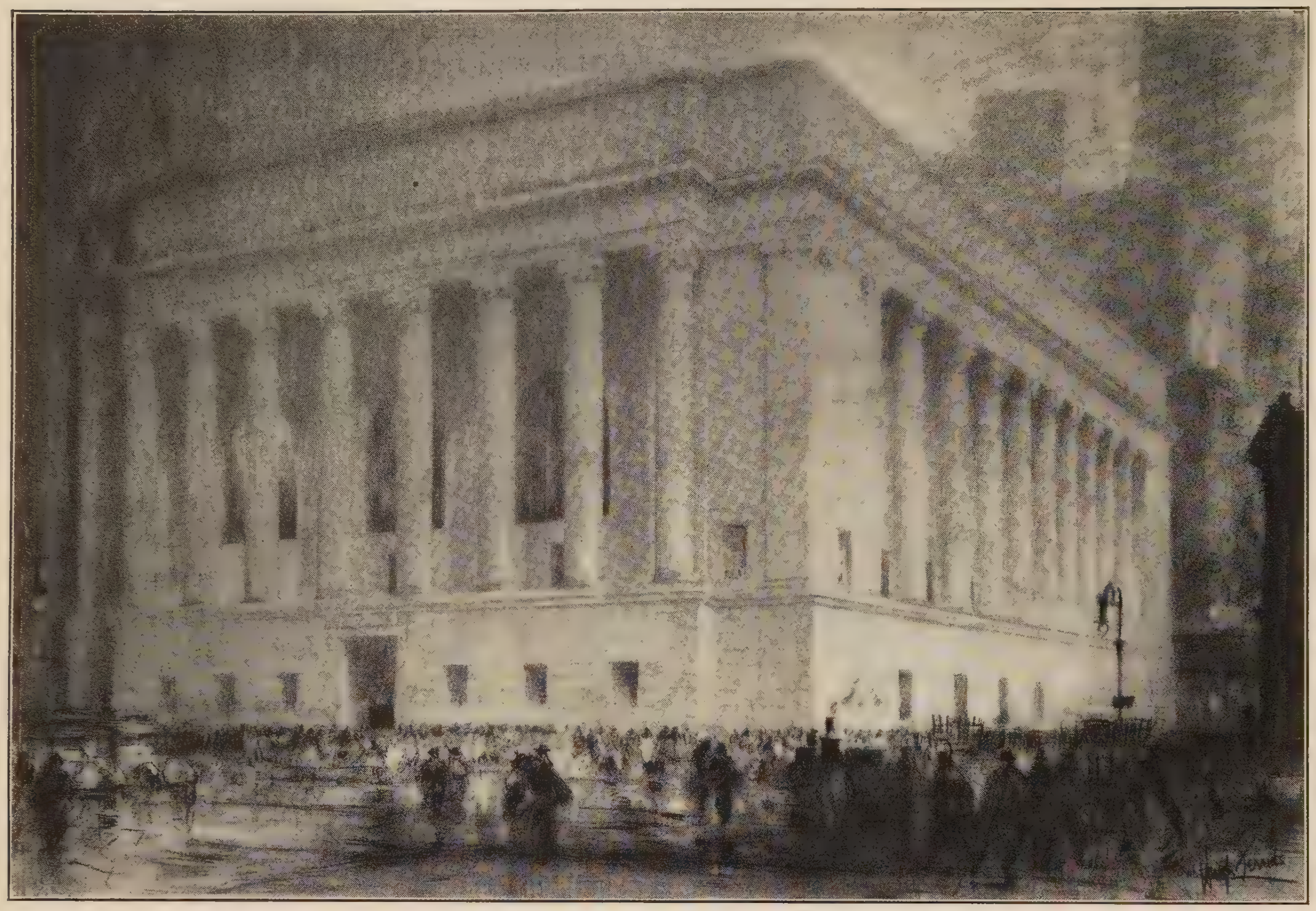

The Greenwich Savings Bank

This building now stands nearly completed at Thirty-sixth Street between Broadway and Sixth Avenue, New York City. It was designed by York and Sawyer, and is being built by Marc Eidlitz & Son. All insulating materials used in connection with the heating, ventilating, plumbing and drinking water systems of this building were furnished and applied by Johns-Manville.

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BUILT-UP ROOFS

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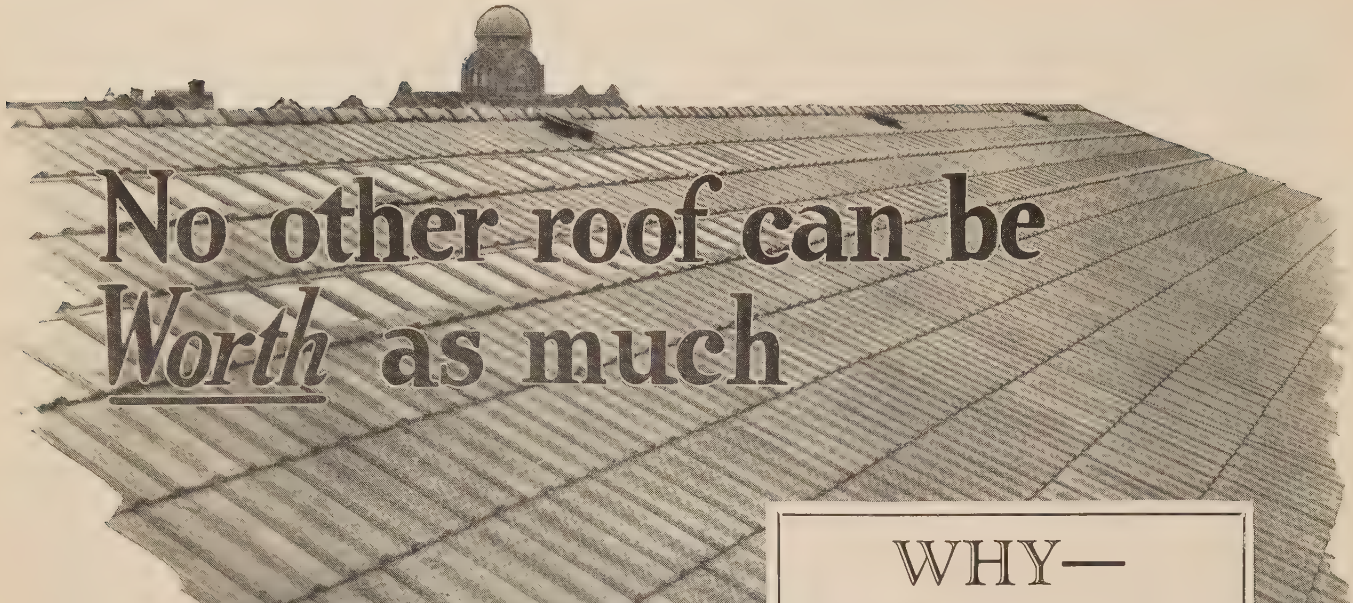

No other roof can be *Worth* as much

IF BUILDERS would pause to make a careful cost comparison they would find, as hundreds have found, that the architectural beauty of Federal Roof Tile is a luxury that costs nothing—that on the contrary it is the mark of inherent permanence without maintenance expense, uniformity of manufacture and correct design—qualities that make Federal Cement Tile the most economical of all roofs.

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Let us show you how you can have a handsome roof at less cost than a disfiguring roof. Have you read the descriptive booklet "Covered With Federal"?

Federal Cement Tile is made in sizes and styles for all flat and pitched surfaces—red and natural finish

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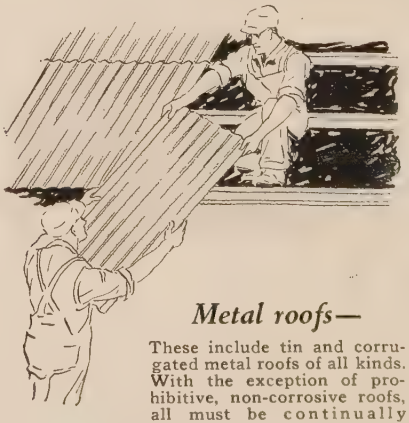
The composition covered wood roof—

This includes tar or asphalt and composition coverings. None of these roofs is fireproof—all require periodic recovering, painting and frequent repairs—all are short lived and greatly increase insurance rates. Half of all fires start or spread on the wood roof—and fire insurance does not cover interrupted production.



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These include tin and corrugated metal roofs of all kinds. With the exception of prohibitive, non-corrosive roofs, all must be continually scraped and painted and in spite of this they almost invariably rust out in the joints and from underneath. Moreover, temperature changes open joints, cause rust, and excessive repairs.

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These are either poured on the job or precast of fireproof material. It is an established fact that no material can rival the permanence of concrete, and concrete to be absolutely uniform must be precast under ideal conditions. There is nothing to burn about a Federal roof of precast concrete. It never requires covering when installed on pitched surfaces. Its life is measured in centuries. There are no repairs. It reduces insurance rates. Manufactured in the largest plant in the world, devoted exclusively to fireproof roofing, it stands on its record as the unrivalled roof.

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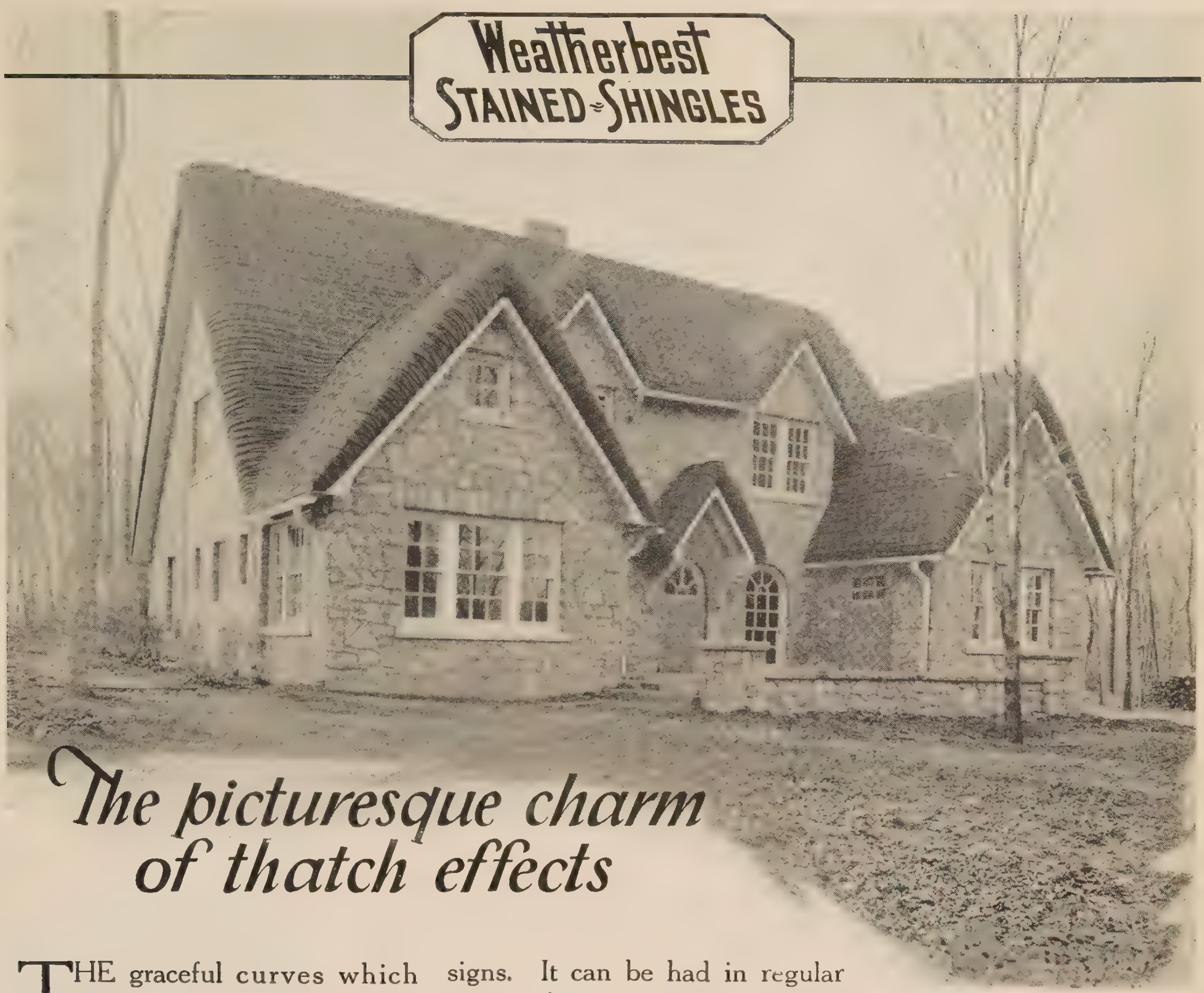

The picturesque charm of thatch effects

THE graceful curves which seemed to be permanently lost when straw roofs were abandoned have been rediscovered—in WEATHERBEST Thatched Effect Stained Shingles.

The soft roll at ridge, eaves, hips and rakes—the irregular texture of the surface—the quaint tints of weathered straw—all are faithfully suggested in a medium as practical and durable as it is beautiful.

The WEATHERBEST Thatched Effect roof harmonizes particularly with old English or bungalow designs. It can be had in regular straw effects or variegated colors.

WEATHERBEST Stained Shingles are all vertical grain, British Columbia Red Cedar, stained separately —not bundle-dipped. WEATHBEST Stain, used exclusively, is composed of the strongest color pigments obtainable, high grade creosote preservatives and pure linseed oil as a "binder." Write for the WEATHERBEST Thatched Effect Booklet, giving complete plans and specifications for WEATHERBEST Thatched Effect Roofs.

WEATHERBEST Dark Straw Thatched Effect Stained Shingles have been used on this attractive home, designed by M. M. Miley and Leo Croell, and built by Hopkins Brothers for A. G. Sharp, Ottawa Drive, Youngstown, Ohio.

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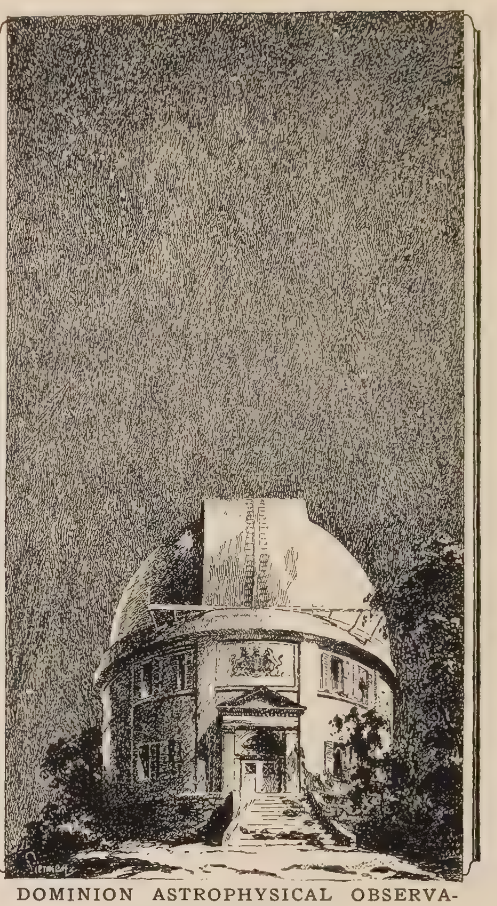

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Dome, window and door coverings are of Toncan.

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"Our attention was first called to Toncan some years ago for use in hoods over cooking apparatus in large hospital kitchens," say Kendall Taylor & Co., Architects of Boston, and they add, "The results were so satisfactory that we have since used the material in many buildings. We have found 'Toncan' a solution of many of our sheet metal problems."

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In the new American Royal Exposition Building at Kansas City seven acres of floor space are heated by warm air carried in Toncan Metal ducts. C. E. Smith, the Architect and Engineer, insisted on the best and Toncan was selected. The Supreme Heater and Ventilating Corporation of St. Louis handled the heating work.

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These are two of the thousands of places where Toncan Metal has proven that it will endure.

The long life of Toncan is born into every square inch of it as it passes through the hands of experienced metal workers.

Toncan is iron, purified, made strong, lasting and rust-resisting, by alloying with the proper amount of copper.

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Write to us on any subject pertaining to the use of sheet metal in building construction.

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And one that will last, for all sheet metal is Toncan. Every home-builder should use Toncan for gutters, leaders and other sheet metal work. Architect, J. T. Burkett, Waterloo, Iowa.

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"Cementile" furnishes a lasting covering for industrial buildings, school buildings, garages, and theatres; it requires no repairs, painting, or renewals. Fundamentally an indestructible, fireproof, and weatherproof roof of lasting merit. Water and heat have no effect on "Cementile." This is why many of the largest architects, engineers, and industrial concerns in the country are standardizing on "Cementile" roofs. We manufacture and erect all our roofs.

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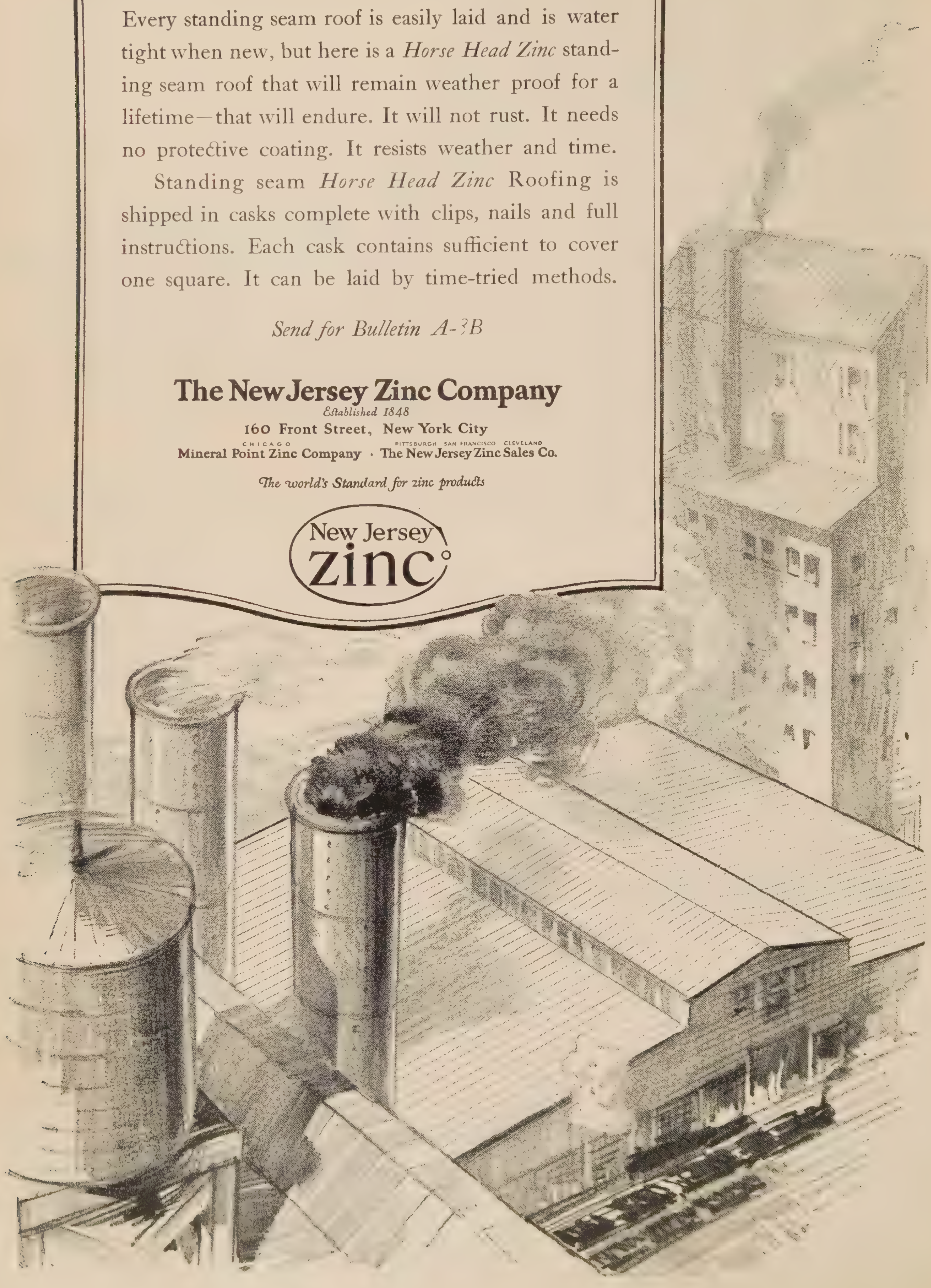

Every standing seam roof is easily laid and is water tight when new, but here is a *Horse Head Zinc* standing seam roof that will remain weather proof for a lifetime—that will endure. It will not rust. It needs no protective coating. It resists weather and time.

Standing seam *Horse Head Zinc* Roofing is shipped in casks complete with clips, nails and full instructions. Each cask contains sufficient to cover one square. It can be laid by time-tried methods.

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The Richardson Super-Giant Shingle built on a 50% thicker base of the famous Richardson felt, absorbs and holds 100% more actual waterproofing than does the ordinary shingle

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Naturally, you want to give your clients a slate-surfaced shingle that will stand up unusually long under weathering. How long such a shingle will last depends largely, as you know, upon the actual waterproofing contained in its felt base.

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Furthermore, the waterproofing is in itself unusually durable. For it is Viskalt, vacuum-processed and 99.8% pure bitumen.

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Beauty hitherto unknown

On this super shingle exclusively is used a color in slate hitherto unknown—a rich *weathered brown* found only in the Richardson quarries of Georgia.

It is as beautiful as the frosty tan of autumn fields, and it mellows richly with age. Architects are enthusiastic at the rare color effects made possible by the weathered brown, especially when it is blended with other Richardson Super-Giant Shingles of *jade green, tile red*, or *black pearl.*

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If you have not already discovered the *lastingly* beautiful effects made possible by the new weathered brown, write us. We will send you our beautiful new booklet *Roofs of Distinction* together with samples of Richardson Super-Giant Shingles in weathered brown and other colors. And, remember—for every roofing use there is a Richardson product.

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Please send me samples of Richardson Super-Giant Shingles, your new booklet and further facts about Richardson Roofing.
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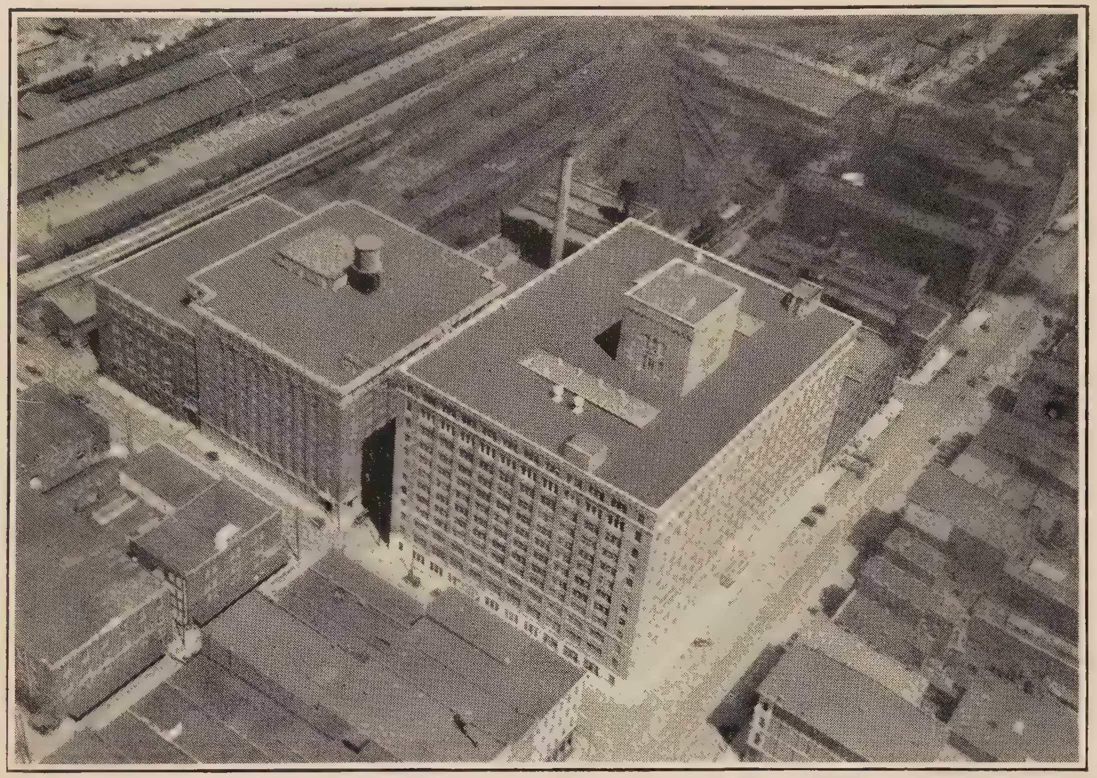
Viskalt Membrane Roof

Pliant Under Stress



The Belknap Hardware and Mfg. Co., Inc. Building, Louisville. Graham, Anderson, Probst and White, Architects, Chicago. Struck Construction Co., Louisville, Builders

—covers this new business block in Louisville

THE new home of the Belknap Hardware and Manufacturing Company, Inc., Louisville, Kentucky, is assured of permanent weather protection by a Viskalt Membrane Roof.

Each of the twelve floors of this new building covers an area of 55,000 square feet, making this one of the largest buildings devoted to the hardware industry in the United States.

That the architects, Graham, Anderson, Probst and White, of Chicago, and the officials of the Belknap Company, after thorough investigation, agreed on a Viskalt Membrane Roof for this building shows how generally Viskalt is recognized as the logical covering for business structures. Moderate cost of application plus years of endurance make it doubly economical and satisfactory.

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RICHARDSON ROOFING

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The story of two men and the Times

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Utility and beauty of line and material have been admirably combined. Permanence in all other materials demanded the same in the piping. So Bridgeport Plumrite was chosen. It will last as long as the building.

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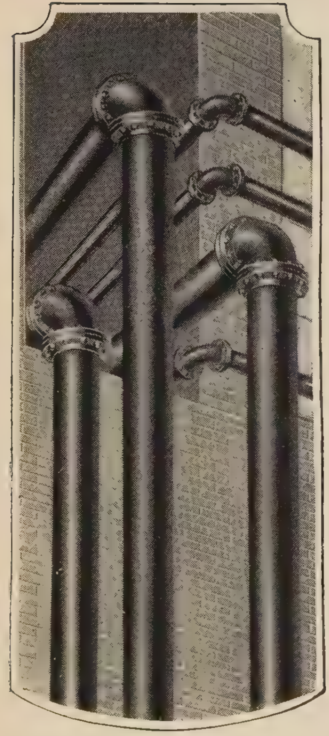
Abendroth Bros.	Port Chester, N. Y.
National F'dry Co. of N. Y., Inc.	10 Sanford St., Bklyn., N. Y.
Krupp Foundry Co.	Lansdale, Pa.

BYERS
GENUINE WROUGHT IRON
PIPE

Insurance Exchange Building, Des Moines, Iowa. Boyd & Moore, Architects. Byers for Plumbing.

LEFT: *Federal Reserve Bank, Cleveland. Walker & Weeks, Architects. Byers for Heating.*

The trend toward better pipe



EVEN an infinitesimal amount of corrosion—far too small to be measured from day to day, but irresistibly going on from year to year—ultimately becomes destructive to any plumbing, heating, or other pipe system. Staggering replacement expense then has to be faced. Measured against such odds, the additional cost of Byers pipe is a small consideration, for it adds but little to the first cost of installation.

A distinct trend towards better pipe has set in, based on the soundest of all motives—past experience. And this trend has found expression in the specifications and use, on an ever broadening scale, of Byers pipe of genuine wrought iron, the pipe of proven durability.

With its consistent record of satisfactory service in buildings upwards of 30 and 40 years old, Byers is being specified, in the best engineering practice, for an increasing number of services, where formerly any pipe was considered "good enough."

Literature on Request

A. M. BYERS COMPANY ***Established 1864*** PITTSBURGH, PA.

New York Philadelphia Boston Chicago Houston

Distributors in all Jobbing Centers

Look for the Name and Year rolled in every length

In Los Angeles

The Pipe Basis for Modern Building

SOUTHERN California may well feel proud of its architecture, so harmoniously woven into the beauty of its surroundings. Almost equally attractive to the observant visitor is the substantial character of the buildings. Sound workmanship and quality materials—including "NATIONAL" Pipe—have been skillfully employed in the erection of these structures; to them belongs no small share of credit for helping to make Los Angeles the Wonder City of the Pacific Coast.

The buildings illustrated are taken from Bulletin No. 25 "NATIONAL" Pipe in Large Buildings. The new edition of this publication, revised and enlarged, will be sent upon request.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.
DISTRICT SALES OFFICES IN THE LARGER CITIES

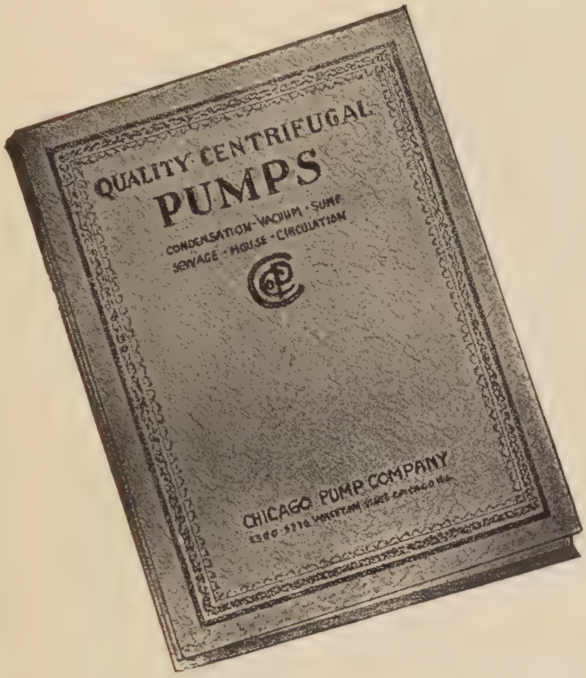
THE bugaboo of brass pipe—slightly higher initial cost. But think of the enormous saving with no repairs or replacements. Iron pipe will rust; brass pipe won't.

The Hotel McAlpin is a big business proposition. It doesn't spend money for fads or useless luxuries and they figured that brass pipe would more than save its extra cost in dollars and cents.

Wouldn't it be worth while to you at least to get the facts? Just write us for information.

CHASE METAL WORKS
Division of Chase Companies Inc.
WATERBVRY CONNECTICVT
PLANTS
CHASE METAL WORKS Trade CHASE Mark CHASE ROLLING MILLS

The McAlpin Hotel, New York. Frank M. Andrews, Inc., architects. Equipped throughout with CHASE Brass Pipe.



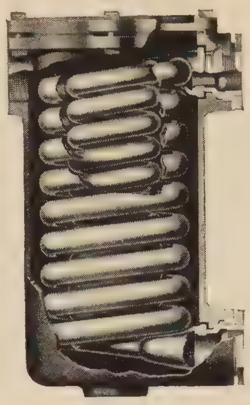
Outline Forms
of
Pump Specifications

A convenient reference for Architects, Engineers, and those specifying pumping equipment

The specifications are brief and include only the most essential information worded to protect the Architect and his client. At the same time they give the contractor a clear conception of what is needed.

SEND FOR YOUR COPY.

Chicago Pump Company
2316 WOLFRAM ST. CHICAGO, ILL.



Its COMFORT and ECONOMY delight home owners.

The specifying of little conveniences and economies for houses you are planning is not exactly your responsibility yet—

—your clients are the more delighted if the home you create for them is complete in its livability. And this means thoroughness in your attention to little conveniences such as—

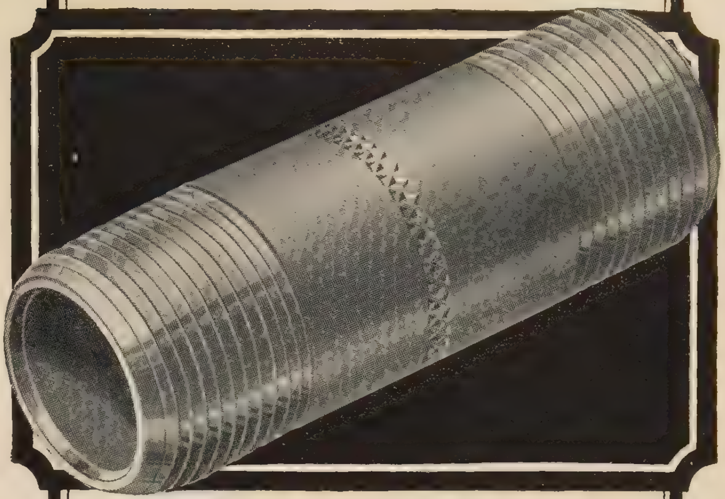
—an unfailing and costless faucet supply of hot water.

EXCELSO

utilizes the fire of the boiler or furnace—saving, during the heating season, the care and cost of separate fuel and fire. It connects to the regular piping system and tank.

For your client's and your own satisfaction wouldn't it be well to have a file on Excelso Specifications? Write for them.

EXCELSO SPECIALTY WORKS, Inc.
361 Excelso Building :: Buffalo, N. Y.



Announcing

A Long Needed Innovation

THE danger of using steel nipples with Reading Genuine Wrought Iron Pipe may now be obviated.

Each Reading Nipple is identified with a distinctive knurled circle of diamond design. Ask for it by name — look for the mark.

READING IRON COMPANY
READING, PA.

World's Largest Manufacturers of
Genuine Wrought Iron Pipe

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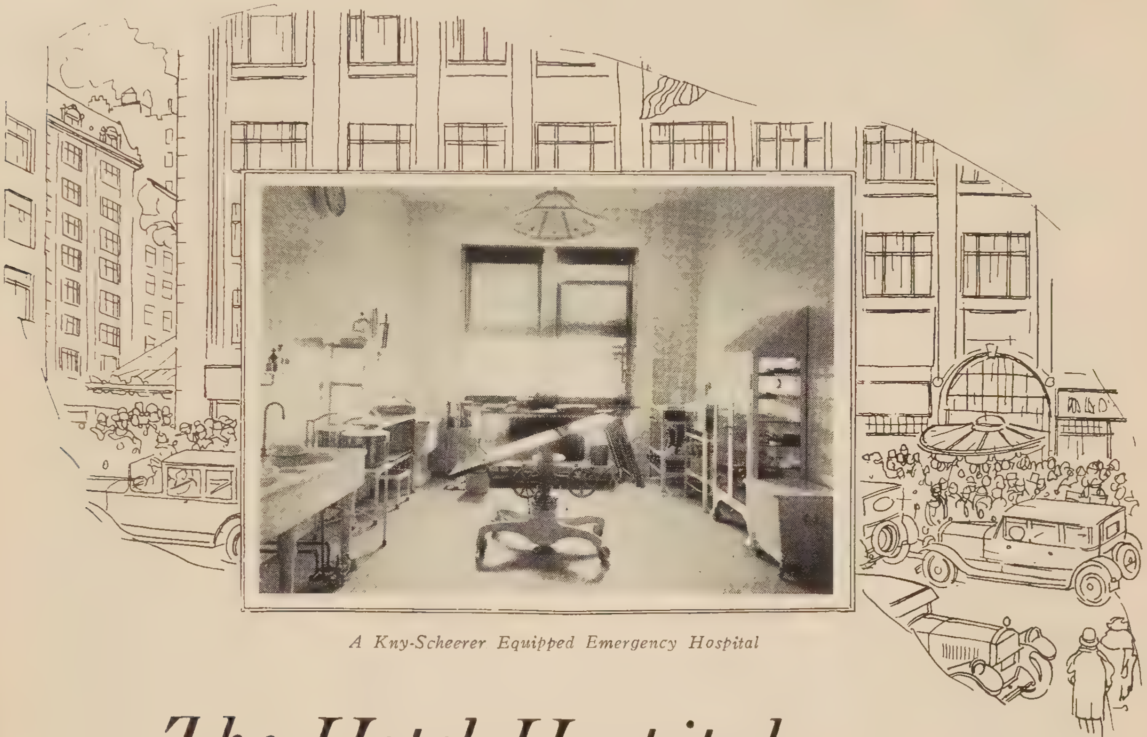
READING PIPE
GENUINE WROUGHT IRON

EST. READING 1848



A Kny-Scheerer Equipped Emergency Hospital

The Hotel Hospital

Electro-Medical Apparatus
First Aid Equipment
Hospital Furniture
Hospital and Surgical Sundries
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Hydro-Therapeutic Apparatus
Instruments
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Laboratory Equipment
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  —Bed Pan
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  Water
X-Ray Apparatus and Equipment

ALMOST any vital event in human life which may happen in a city of two million, can and does occur in the hotels of our country—including illness and injury.

Hotels which have recognized their obligation to employees and guests by installing adequate emergency hospitals to care promptly for illness and injury within their doors, find that they have also added items of good will and prestige of immense value. One who has been ill or injured while a guest of such a hotel carries with him a vivid picture of the sympathetic attendance given him through the house hospital that is not soon forgotten.

The Kny-Scheerer Corporation, through its Engineering Service Department, places at the disposal of interested Architects its experience of many years in this field. This department will advise you on space, arrangement and cost of suitable equipment for the hotel you may be designing.

The KNY-SCHEERER Corp.
OF AMERICA
119 Seventh Avenue New York, N.Y.

Masterbuilt Floors

Missouri has been shown

NOTHING can prove the serviceability of concrete flooring as conclusively as gruelling freight dock abuse.

The Masterbuilt Floor of the St. Louis Municipal Dock, designed and constructed under supervision of C. E. Smith & Co., St. Louis Engineers, has withstood the toughest tests of service.

It has stood up under the merciless pounding of heavy traffic and the endless grinding of steel-wheeled trucks. All the time it has been exposed to weather-wear—blistering sun, biting cold and beating rain. Its surface remains in excellent condition in spite of five years of this usually destructive combination.

Masterbuilt Floors mean year-after-year service even under the most strenuous and abusive use. Thousands of Masterbuilt installations are tangible proof of the serviceability and economy of Wear-proof, Water-proof, Dust-proof Masterbuilt Floors.

A Master Builders floor expert will be glad to study your individual needs and advise you as to the proper handling.

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Sales Offices
in Ninety Cities

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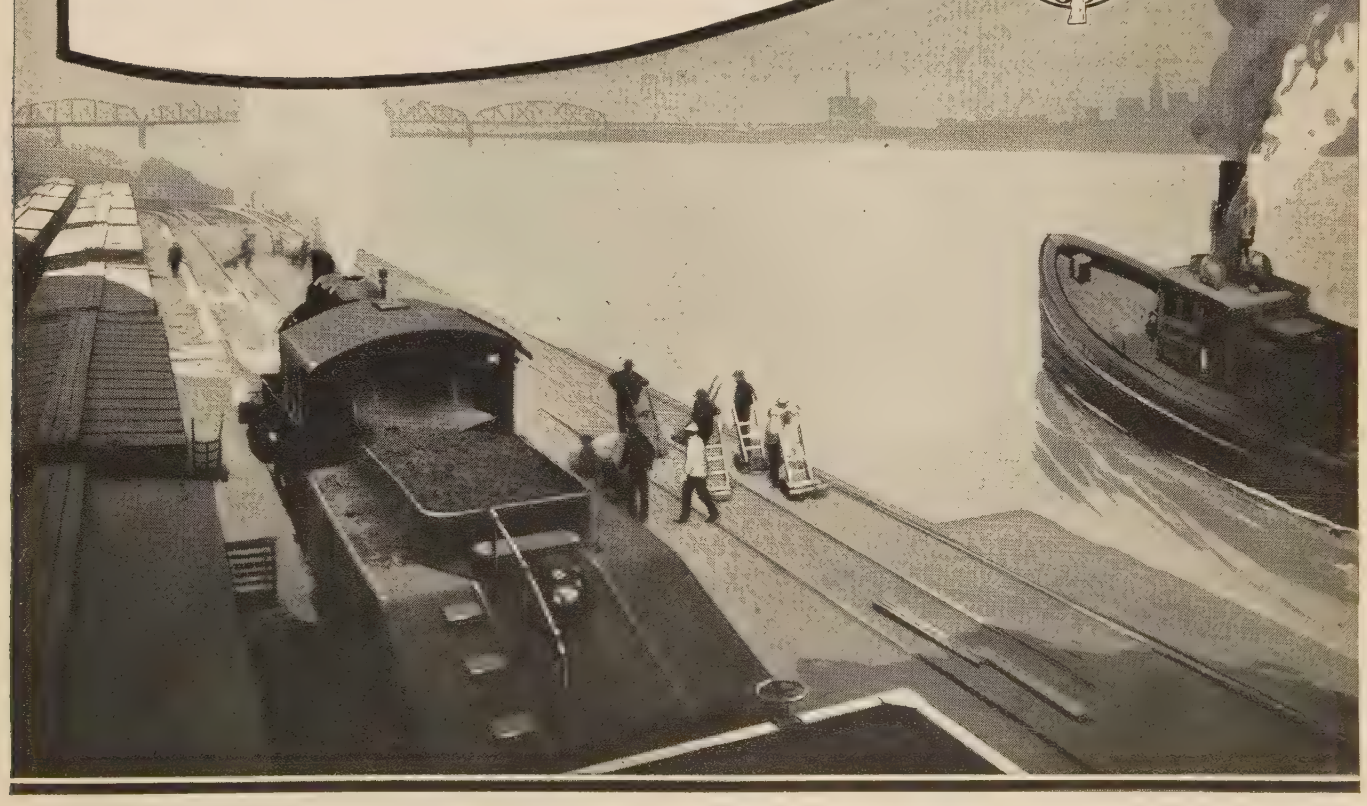

Standard Sizes of CONDUITS for the Installation of Wires and Cables
ADOPTED AND RECOMMENDED BY
THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION OF THE UNITED STATES
AND REQUIRED BY
THE NATIONAL ELECTRICAL CODE
DRAWINGS ARE ONE HALF FULL SIZE

WHAT size of conduit? What about elbows? Questions instantly and authoritatively settled for any job where rigid conduit is to be installed.

This Chart hangs on the wall as handy as a calendar—and as necessary when wiring must be figured.

It is a quiet reminder of *Sherarduct*—the Rigid Conduit. The Chart is free, and so intensely practical you will regularly use it.

National Metal Molding Company

NATIONAL PRODUCTS

WORLD'S LARGEST PRODUCERS OF ELECTRICAL
CONDUITS AND FITTINGS

1228 Fulton Building, Pittsburgh, Pa. 10

Represented in All Principal Cities

Sherarduct

The Rigid Conduit That Bends

Make certain on every wiring job with this free Chart. Just slip this coupon in the mail now; that's all you need to do.

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SIGN—TEAR OFF

**National
Metal Molding
Company
Pittsburgh, Pa.**

Please send free Chart of
Standard Sizes of Conduits.

Name

Firm

Address

No. 1228

MADDOCK *Sanitary* Fixtures

Bousseau's Urania done to grace La Granja Gardens of Philip the Fifth of Spain

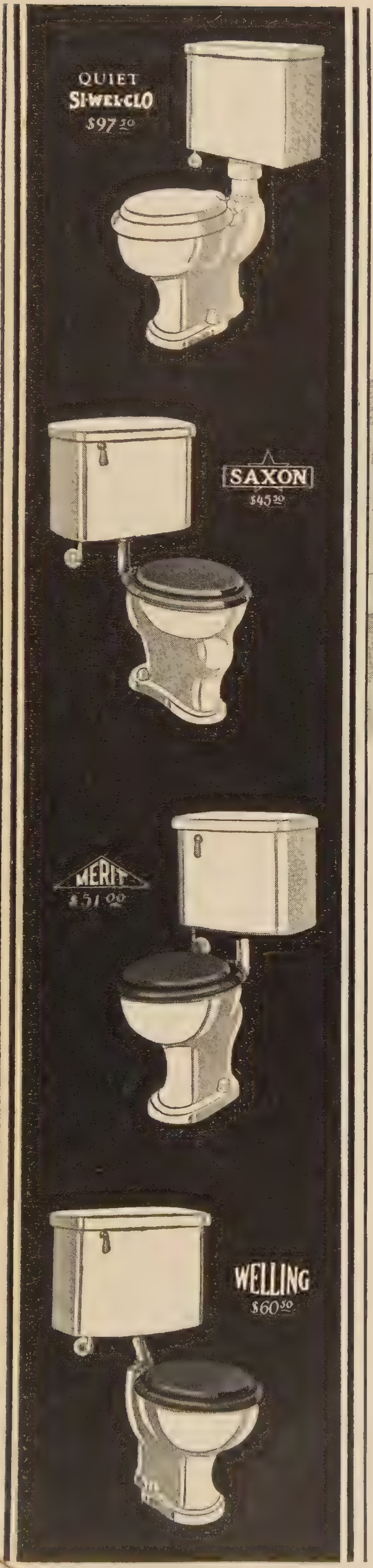
"objets d'art"

WHEREVER instinctive good taste is reflected in the appointments of the home—there one may expect to find Thomas Maddock fixtures in the bathroom.

ARISTON-
MADERA SILENT
K-2900

White Vitreous China Non-Soiling Silent Action Syphon Jet Closet with extended top inlet, floor outlet, extended front bowl and cut-back flushing rim. Equipped with white celluloid-covered seat, flush pipe cover and white vitreous china tank with heavy brass, silent acting fittings.

THOMAS MADDOCK'S SONS COMPANY
Trenton, New Jersey.



IT is in the bathroom that your little children first learn the rudiments of health and hygiene. The influence of the "health-center" on your children's habits of personal cleanliness is in direct proportion to the care with which you have chosen the fixtures.

Proper sanitation demands a water closet that flushes thoroughly, quickly, and is of such material as can be most easily cleaned. "Tepeco" supplies such fixtures at a price range within the reach of all.

Prices are F. O. B. Trenton

Write for our free Plan Book
"Bathrooms of Character"

THE TRENTON POTTERIES COMPANY

TRENTON, N. J., U. S. A.

NEW YORK BOSTON SAN FRANCISCO

TEPECO Water Closets

FOR EVERY PLACE AND PURSE

Dependable

PLUMBING FIXTURES

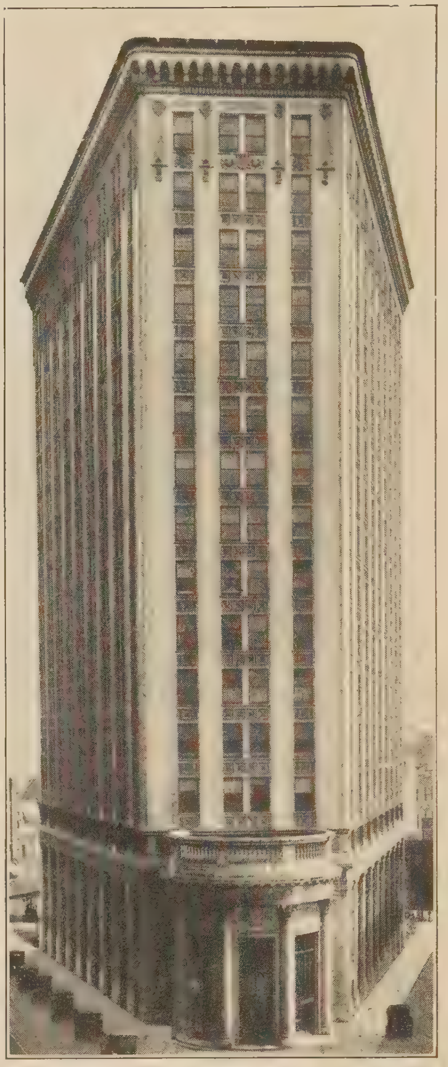
Atlanta, Ga., January 17, 1923.

THE JOHN DOUGLAS COMPANY,
Cincinnati, Ohio.

It is our pleasure to advise the satisfactory results we have obtained with your fixtures, which we used entirely in fitting out the Hurt Building.

We have approximately 500 offices in this building, which handle in the neighborhood of twelve thousand people daily. During the ten-year period our total cost for repairs for all sanitary fixtures has not exceeded twenty dollars, which covers the expense on 650 sanitary fixtures in the building. . . .

(*Signed*) S. L. HURT, *Vice-President,*
Atlanta Realty Corporation.



THE HURT BUILDING, Atlanta, Ga.; J. E. R. Carpenter, Atlanta, Architect; Chickasaw Plumbing Co., Memphis, Tenn.; Plumbing Contractors

"Dependability" and "Douglas" are synonymous — when applied to plumbing fixitures. For Douglas Quality Plumbing Fixtures promise long and uninterrupted service with low maintenance cost—and keep their promise.

Illustrative of this are the statements, quoted above, of Mr. S. L. Hurt, vice-president of the Atlanta Realty Corporation, owners of the Hurt Building, whose experience with Douglas products is no different than that of the thousands of satisfied users all over the country.

And in addition the beauty and durability of Douglas Fixtures match the attractiveness of and permanence exhibited by the exterior of the building.

Aren't these sufficient reasons why the architect who wants to retain the good-will of his clients should specify Douglas Plumbing Fixtures?

THE JOHN DOUGLAS COMPANY

Makers of High-Grade
Plumbing Fixtures
since 1887

THE BEST IS CHEAPEST
DOUGLAS
TRADE MARK
INCRESCENT

Factories at Cincinnati, O.
and
Trenton, N. J.

CINCINNATI, OHIO

Write for circular illustrating and describing the ONLY Stall Urinals made of Solid Vitreous China.

NEW COLONIAL HOTEL, Nassau, Bahamas: Kenneth Murchison, New York City, Architect; C. V. Driggs, Inc., New York City, Jobbers; Gustave Staats, New York City, Plumber

KOHLER

And the NEW COLONIAL HOTEL

Girdled with palms and fronting blue waters where yachts and seaplanes ride at anchor, the beautiful New Colonial Hotel at Nassau has provided another haven for the American fleeing the northern cold.

The visitor there will find handsome plumbing ware marked with the familiar name "Kohler" in the enamel; an exposition, under a foreign flag, of American manufacturing skill. There are 153 Kohler "Viceroy" recess baths and numerous other Kohler fixtures in this installation.

KOHLER OF KOHLER

Kohler Co., *Founded 1873,* Kohler, Wisconsin
Shipping Point, Sheboygan, Wisconsin

BRANCHES IN PRINCIPAL CITIES

MANUFACTURERS OF ENAMELED PLUMBING WARE AND KOHLER AUTOMATIC POWER AND LIGHT 110 VOLT D. C.

This is an every day experience

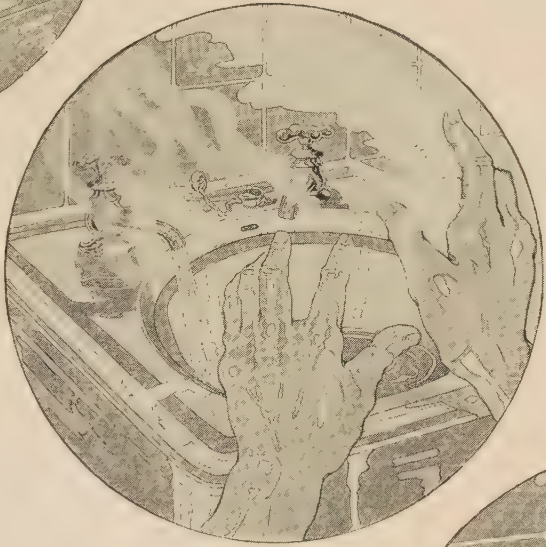
—And shows why people everywhere are turning to the one nozzle type of lavatory fixture.

SPECIFICATIONS

H-2276 — The Unit-Acto Lavatory Fixture has solid china cross-arm handles, china escutcheons, ¼-inch threaded tails on valves, raised nozzle 3¼ inches long. Acto Pop-up waste with china knob and 1¼-inch diameter tail. Fits lavatories with overflow and drilled for two faucets with chain-stay back of the overflow.

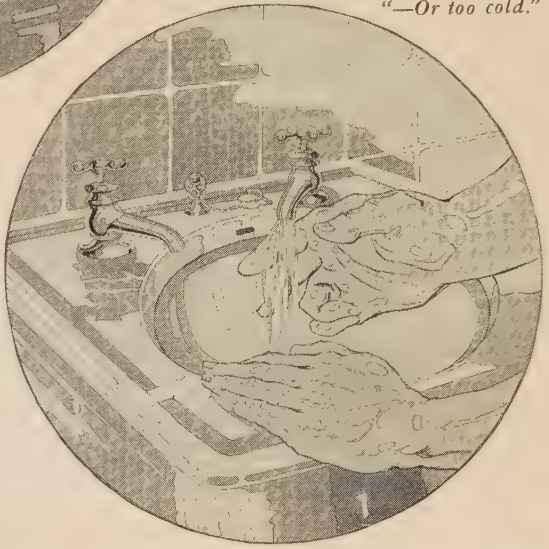
H-2266—The Unit Lavatory Fixture has solid china cross-arm handles, china escutcheons, ¼-inch threaded tails on valves, raised nozzle 3⅛ inches long, standing waste with china knob and 1¼-inch diameter tail. Without extra drilling can be installed on lavatories cut for standing waste and two faucets.

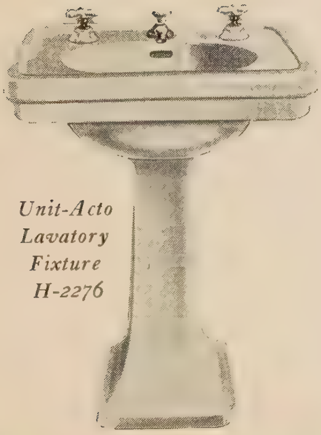
"I don't like to wash this way in a bowl or basin where I use the water over and over again—I like to wash in running water."



"—But with separate faucets it's either too hot—

"—Or too cold."





Unit-Acto Lavatory Fixture H-2276

Now this man, also his family, would like to have a lavatory with a one-nozzle fixture—a Unit or Unit-Acto fixture can be put on his present lavatory.

— Then everybody in the house could wash in running water at a comfortable temperature and the lavatory would be modern — like this.

Unit and Unit-Acto Lavatory Fixtures are shown in our Catalogue H. We'll send a copy promptly.

SPEAKMAN COMPANY
Wilmington, Delaware

SPEAKMAN **UNIT AND UNIT ACTO LAVATORY FIXTURES**

CRANE BEAUTY IN THE OPEN ; CRANE QUALITY IN ALL HIDDEN FITTINGS

To satisfied users of Crane products is due the tireless growth of the pioneer shop of 1855 to the present system of plants, branches and offices in 145 cities at home and abroad, all supplying quality materials for every plumbing need.

If the Crane name today has a grateful meaning for architects, builders, plumbing contractors and all those for whom they build, it is because Crane engineers and designers are able to draw upon these years of informing experience to guide them in creating better and more effective valves, fittings and fixtures of every sort for both domestic and industrial use.

In sanitary and heating materials for the home, Crane provides for the wants of small dwellings as carefully as for the requirements of great town and country houses, hotels, apartments and clubs.

CRANE

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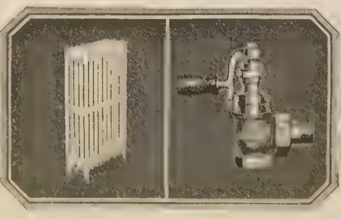


"Corto" Radiator. Radiator Valve, No. 231

Whale-Bone-Ite Toilet Seats

The Standard of Comparison

Appearance—Utility—Economical
Life Long Service

Three Recent Installations

THE SEVILLA-BILTMORE, HAVANA, CUBA
Equipped with Whale-Bone-Ite
192 No. 21-91 Ebony
19 No. 21-9 Ebony

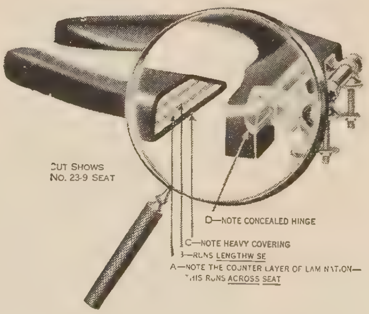
SCHULTZ-WEAVER Archts.
New York City

BUSINESS MEN'S CLUB, CINCINNATI
Equipped with Whale-Bone-Ite
225 No. 23-96 Ebony

SAMUEL HANNAFORD and SONS, and GARBER and WOODWARD, Archts.
Cincinnati

EDWARDS' HOUSE, JACKSON, MISS.
Equipped with Whale-Bone-Ite
307 No. 23-9 Ebony
17 No. 27-9 Ebony

W. T. NOLAN, Architect
New Orleans



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Plumbers
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Everywhere

Or Ask
Seat Dept.
of Makers

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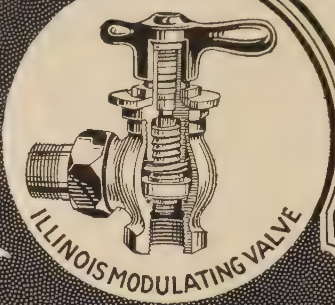
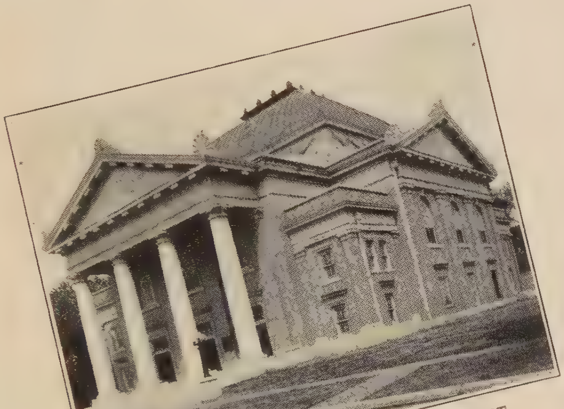
ILLINOIS HEATING SYSTEMS

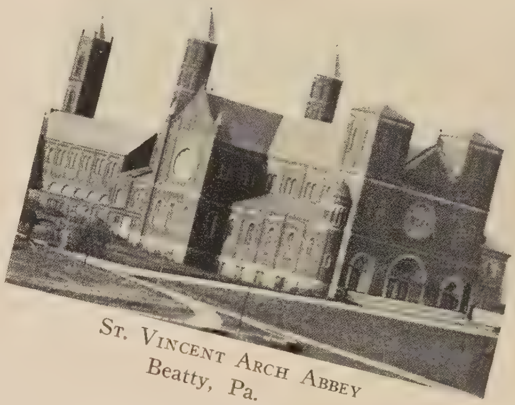
~MAKE WARM FRIENDS~



ASSURE COMFORT — AVOID TROUBLE



First Church of Christ, Scientist
Wichita, Kansas



St. Vincent Arch Abbey
Beatty, Pa.

ILLINOIS HEATING SYSTEMS INSURE RAPID CIRCULATION OF STEAM AND NOISELESS OPERATION

These recognized features have resulted in *Illinois Systems* being largely specified and used on church work. As generally churches are not continuously heated, therefore quick circulation when heat is required is very important.

Also, the absence of noise is imperative, and *Illinois Systems* fulfill this important requirement.

ILLINOIS VAPOR SYSTEMS
COMBINE

ADVANCED ENGINEERING	SUPERIOR SPECIALTIES	RESPONSIBLE GUARANTEES

Write for Bulletin No. 21

REPRESENTATIVES IN 36 CITIES OF U.S.A.

ILLINOIS ENGINEERING COMPANY

ROBT. L. GIFFORD President INCORPORATED 1900

CHICAGO

EAST WATERLOO HIGH SCHOOL, EAST WATERLOO, IOWA

Architect
M. B. CLEVELAND
East Waterloo, Iowa

Plumbing Contractors
ZOOK & BENTZ
East Waterloo, Iowa

HIGH SCHOOL, PEKIN, ILLINOIS

Architects
HEWITT & EMERSON
Peoria, Ill.

Plumbing Contractors
J. M. SHEA & CO.
Peoria, Ill.

The schools of America are its finest monuments. It is creditable to our national ideals that the best architectural talent and engineering brains have been employed in the construction of our schools.

It is natural therefore that the materials of construction should meet equally high standards. The number of schools using Clow equipment testifies to those standards.

WASHINGTON SCHOOL, RACINE, WISCONSIN

Architect
EDMUND D. FUNSTON
Racine, Wis.

Plumbing Contractor
HARRY MORRIS
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Manufacturers' Catalogs and Business Announcements

THE HOFFMAN SPECIALTY COMPANY, INC., Waterbury, Conn. "Hoffman Valves and Controlled Heat." "The Watchman of the Coal Pile; More Heat from Less Coal." "Hoffman Data Book for Heating Engineers and Contractors."

These various publications deal with different aspects of heating, and explain the value of the products made by the Hoffman Specialty Company. The high cost of fuel of every kind naturally renders necessary its being used with due economy, and the chief means by which economy can be effected without danger to comfort is by the use of carefully planned heating apparatus which makes use of the various devices which the ingenuity of inventors has provided. The "Data Book" is of particular value since it presents in concise form much information of a standard nature not often recorded in a form as simple as here—data such as that regarding the number of air changes per hour to be figured for buildings and rooms of different kinds, and the heat transmission to be reckoned on in domestic planning.

ANNOUNCEMENTS

Wilford S. Bogue, Architect, has opened an office at 206 Wheat Building, Ft. Worth, Texas.

Robert Peal, Architect, announces the establishment of his office at 2014 East 105th Street, Cleveland.

Ernest H. Fougner announces the removal of his office from 764 Broad Street to 197 Market Street, Newark.

E. L. Robertson and L. R. Patterson, Architects, announce the opening of their office at 310 Calumet Building, Miami, Fla.

Harvey Dakin announces the opening of an office for the practice of architecture at 413 Thatcher Building, Syracuse, N. Y.

Herbert B. Beidler, Architect, announces his removal from 10 South La Salle Street, Chicago, to 813 Ulmer Building, Cleveland.

The office of Wayne Everett Bell, Architect, has been removed from 624 Wayne Street, East, to 613 First National Bank Building, Detroit.

Harry Silverstein announces the establishment of his offices at 574 Jefferson Avenue, Brooklyn. Manufacturers' catalogs and samples are desired.

Harry E. Warren, Architect, announces his removal to 247 Park Avenue, New York. The firm of Jallade, Lindsay & Warren has been dissolved.

Ellsworth V. Holden, William R. Ferris and Asa B. Cross Barnes announce the formation of a partnership for the practice of architecture under the firm name of Holden, Ferris & Barnes, with offices at 1016 Baltimore Avenue, Kansas City.

Herbert L. Cain, Church Architect, of Richmond, Va., announces the opening of a Philadelphia office at 1709 Arch Street, with Albert N. Dobbins in charge.

The partnership of Attwood & Trysell having been dissolved, the business has been taken over by Ernest H. Trysell, who has opened an office at 512 Donovan Building, Detroit.

Starrett & Van Vleck, 8 West 40th Street, New York, announce that Frank Gaertner, Hubert M. Hathaway, Otto A. Johnson and Edgar L. Kirby have been admitted to partnership.

The La Salle, Illinois, office of John Hanifen, with Strawn Gay in charge, has been established in the Tribune Building in that place. Manufacturers' catalogs and samples would be appreciated.

Felix A. Burton, Richard Arnold Fisher, Charles Lewis Pitkin, Dana Somes and Frederick W. Wead announce the removal of their offices to the Thorndike Building, 234 Boylston Street, Boston.

Cyril Edward Schley, Architect, who has been associated for the past eight years with C. Howard Crane and Elmer C. Kiehler, Huron Building, has opened an office in the Lafayette Building, Detroit.

Richard M. Bates, Jr., Architect, announces that William R. Frampton and H. L. Bowers have been taken into the firm which is now known as Bates, Frampton & Bowers, at 412 Eleventh Street, Huntington, W. Va.

Emmet G. Martin, formerly manager of the offices of Albert C. Martin, Architect, has opened offices for the practice of architecture at 603 Citizens' National Bank Building, Los Angeles, with Arlos R. Sedgley in charge. Manufacturers' catalogs and samples are desired.

John P. Helleberg, formerly of the firm of Grabe & Helleberg, Columbus, Nebr., announces the formation with Theodore B. Wells of a partnership for the practice of architecture and engineering under the name of Helleberg & Wells, with offices at 10 Federal Annex Building, Kearney, Nebr.

VAN RENSSELAER P. SAXE, C.E.

Consulting Engineer

STRUCTURAL STEEL
CONCRETE CONSTRUCTION

Knickerbocker Building · Baltimore

Harder to build than a skyscraper

It takes months to erect a building, but it requires years to build a reputation for good work

YOUR professional standing is not measured by one success—nor a half dozen. Years of consistently good work are behind every architect of the first rank.

But good work is not possible unless good materials are used. When concrete floors are to be hardened, use Lapidolith. It turns out the kind of floors that will do you credit.

Dustless, wearproof floors

Lapidolith is a liquid chemical that penetrates the grain of the concrete when brushed on the floor. It combines with the free lime to form a crystalline compound that is as hard as flint.

Lapidolith is the pioneer product in its field. It was developed in the Sonneborn Laboratories fifteen years ago. Years of exacting service under all sorts of conditions have proved its worth.

A floor treated with Lapidolith is dustproof, wearproof, waterproof. It will withstand the hardest kind of wear without needing repairs. Many of the original floors treated with Lapidolith fifteen years ago are still in service today and in excellent condition.

At the present time there are over 300,000,000 square feet of Lapidolized floor in service in the leading industrial plants of this country. We will gladly tell you who some of these concerns are and what they say about Lapidolith if definite facts and figures interest you.

LAPIDOLITH
TRADE MARK

Hydrocide	For water-proofing foundations and damp-proofing the interior of exposed walls. Binds perfectly with plaster.
Cemcoat	An industrial gloss enamel paint, made for both interiors and exteriors. Cemcoat stays white for years, covers more surface, and can be washed again and again.
Lignophol	Prevents wood floors from rotting, splintering or drying out. A preservative that penetrates the wood, renewing the natural oil and gums.

Send for literature giving further details.

L. SONNEBORN SONS, INC.
114 Fifth Ave., New York City

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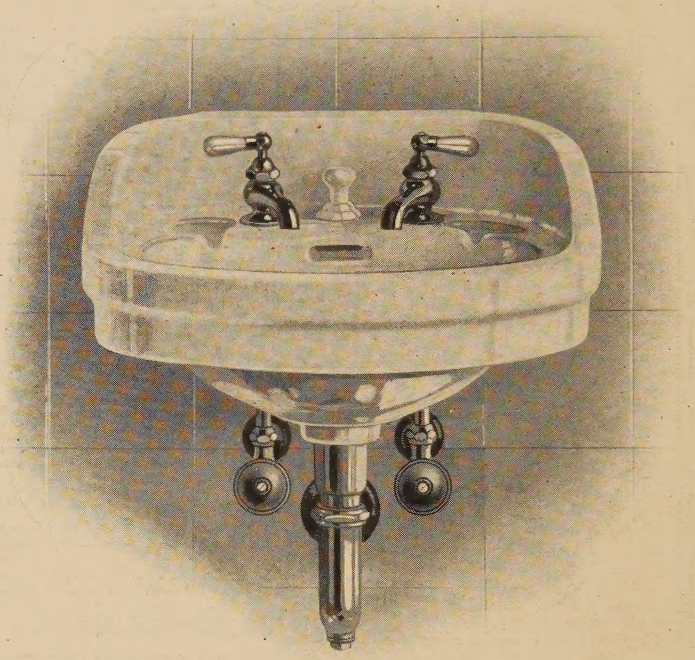

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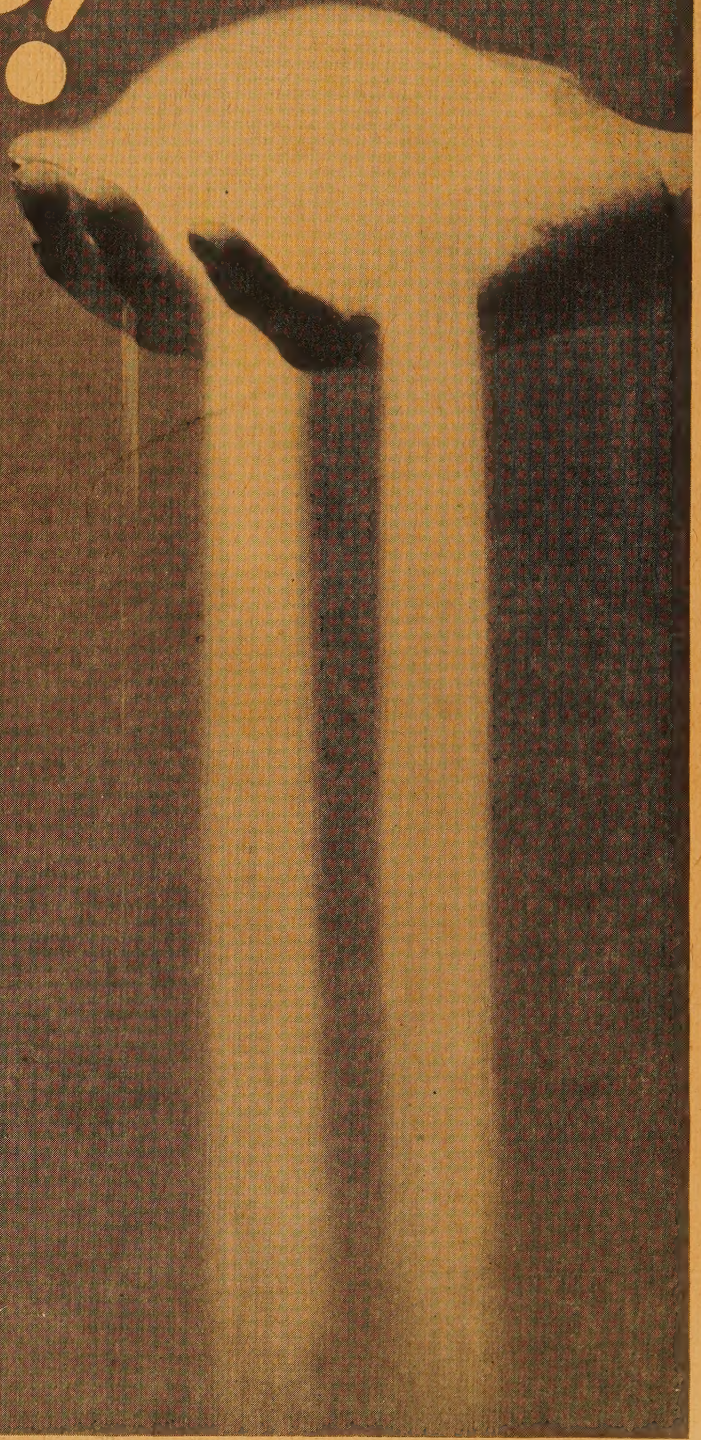

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